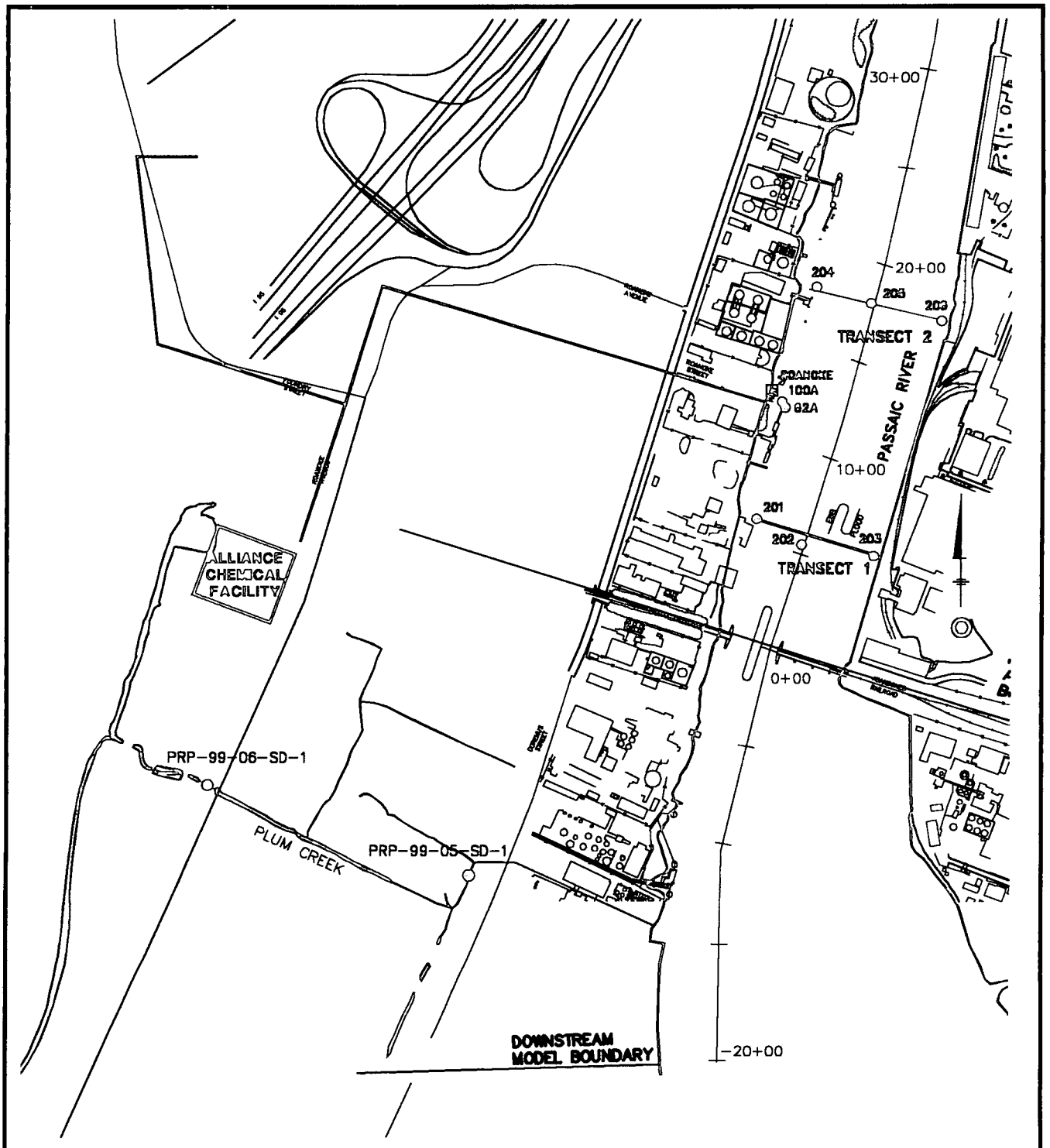
Review of Evidence Compiled on Potentially Responsible Parties of the Passaic River Study Area:

ALLIANCE CHEMICAL COMPANY
33 AVENUE P
NEWARK, NJ 07105

U. S. EPA Region II – Chemical Land Holdings, Inc.
Working Meeting

February 12, 2002



LEGEND:

- APPROXIMATE FACILITY BOUNDARY
- SHORELINE
- CSO/OUTFALL
- RI SAMPLING TRANSECT
- 270 SEDIMENT SAMPLING LOCATION
- TRIBUTARY OR DISCHARGE ROUTE TO THE PASSAIC RIVER

0 700' 1400'

GRAPHIC SCALE

X: 09994X02.DWG, 09994X03.DWG
L: ON=*, OFF=REF
P: PAGESET/PLT-AP
2/11/02 SYR-54-LJP DJP LJP
09994023/09994B09.DWG

SITE LOCATION MAP

ALLIANCE CHEMICAL FACILITY

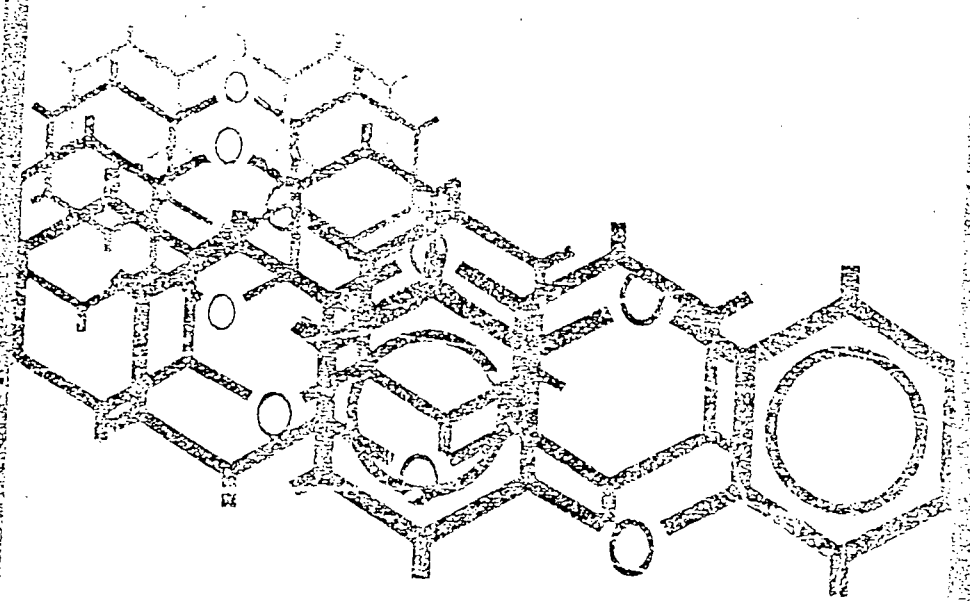
943390002

United States
Environmental Protection
Agency

Research & Development

PB82-136847

EPA Dioxins



EPA-600/2-80-197
November 1980

DIOXINS

M.P. Esposito, T.O. Tiernan, and
Forrest E. Dryden

Contract Nos. 68-03-2577
68-03-2659
68-03-2579

Project Officer
David R. Watkins
Industrial Pollution Control Division
Industrial Environmental Research Laboratory
Cincinnati, Ohio 45268

INDUSTRIAL ENVIRONMENTAL RESEARCH LABORATORY
OFFICE OF RESEARCH AND DEVELOPMENT
U.S. ENVIRONMENTAL PROTECTION AGENCY
CINCINNATI, OHIO 45268

1.a

SECTION 3
SOURCES OF DIOXINS

This section discusses in detail the possible sources of dioxins. The first subsection deals with the basic organic chemicals with the greatest potential for byproduct formation of dioxins. Subsequent subsections examine chlorophenols and their derivatives, hexachlorobenzene, dioxins in particulate air emissions from combustion, dioxins in plastic, and dioxins produced for research.

ORGANIC CHEMICALS

Because of the very large number of organic compounds and their varying proclivities to form dioxins, the compounds were screened initially on the basis of molecular structure, process sequence, and commercial significance.

As a means of focusing attention on those organic chemicals most likely to be associated with the formation of dioxins, they were placed in the following classifications:

Class I—Polyhalogenated phenols, primarily with a halogen ortho to the hydroxyl group, with a high probability of dioxin formation. Products with such compounds appearing as intermediates are also considered. Manufacture of these materials normally involves reaction conditions of elevated temperature plus either alkalinity or free halogen presence, either of which is conducive to formation of halogenated dioxins.

Class II—Ortho-halophenols and ortho-halophenyl ethers where the substituted groups are a mixture of halogens and nonhalogens. Processing conditions are similar to those defined for Class I and produce mixed substituted dioxins. The distinction between Classes I and II is arbitrary and does not indicate necessarily a difference in likelihood of dioxin formation.

Class III—Other chemicals having the possibility, but less likelihood, of dioxin formation. These include 1) ortho substituted aromatic compounds requiring an unusual combination of reaction steps to produce dioxins, 2) aromatic compounds that might form dioxins because of their production under semicombustion conditions, and 3) products that might contain dioxins by way of contamination of their starting materials.

Since only commercially significant products are of interest in this study, the listing is limited to those produced in quantities in excess of 1000 pounds per year and/or whose sales reach $1000 per year, as required for listing in the Stanford Research Institute Directory of Chemical Producers. The product lists are based on commercial production during the past 10 years.

Table 7 lists and classifies commercial organic chemicals selected as having a relationship to dioxin formation or presence. Structures are shown for Classes I and II, the chemicals of primary importance. Class III compounds are listed by name only. In addition, Tables A1-5 in Appendix A give further information on the producers and production sites of organic chemicals.

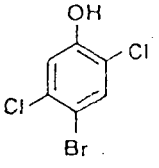
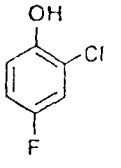
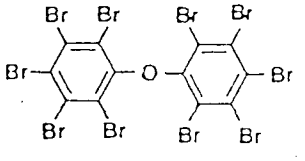
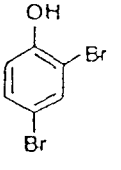
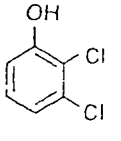
Most of the organic chemicals considered are used as manufacturing intermediates or at least are subjected to subsequent formulation or fabrication.

Thus further processing may introduce additional possibilities for dioxin formation, contamination, and exposure not contemplated within the scope of this study.

Toxicity of the many substituted dibenzo-*p*-dioxins varies widely. None are excluded from consideration here since disproportionation and other composition shifts may bring about changes from lower toxicity forms to higher (Buser 1976).

The intended reaction mechanisms for each Class I organic chemical are shown in Figures 2 through 12. The sequence is shown from left to right across the top of each figure, and the possible dioxin side reaction mechanism diverges to typical dioxin by-products at the bottom of the figure. The specific dioxin products shown are those for which reasonably straightforward mechanisms can be postulated. In many cases more complex and secondary mechanisms may produce dioxins in addition to those shown.

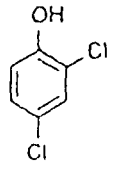
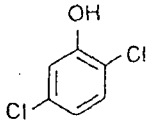
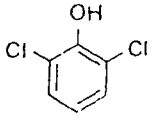
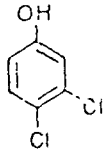
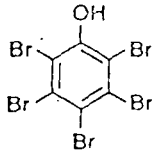
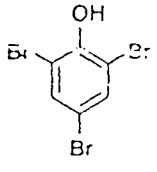
TABLE 7. ORGANIC CHEMICALS RELATED TO DIOXIN FORMATION

Class I	
4-BROMO-2,5-DICHLOROPHENOL	
2-CHLORO-4-FLUOROPHENOL	
DECABROMOPHENOXYBENZENE	
2,4-DIBROMOPHENOL	
2,3-DICHLOROPHENOL	

(continued)

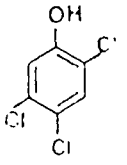
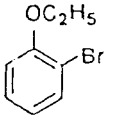
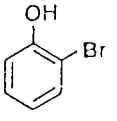
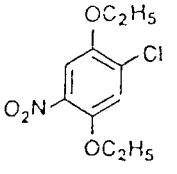
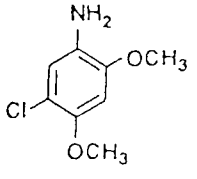
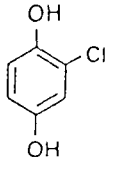
TABLE 7 (continued)

Class I (continued)

2,4-DICHLOROPHENOL	
2,5-DICHLOROPHENOL	
2,6-DICHLOROPHENOL	
3,4-DICHLOROPHENOL	
PENTABROMOPHENOL	
2,4,6-TRIBROMOPHENOL	

(continued)

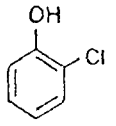
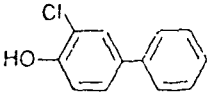
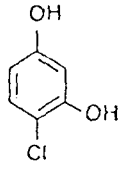
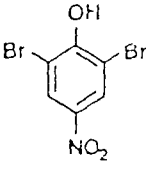
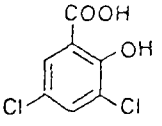
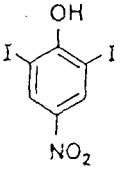
TABLE 7 (continued)

Class I (continued)	
2,4,5-TRICHLOROPHENOL	
Class II	
BROMOPHENETOLE	
O-BROMOPHENOL	
2-CHLORO-1,4-DIETHOXY-5-NITROBENZENE	
5-CHLORO-2,4-DIMETHOXY-ANILINE	
CHLOROHYDROQUINONE	

(continued)

TABLE 7 (continued)

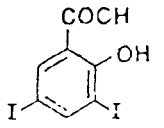
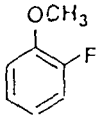
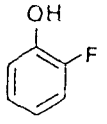
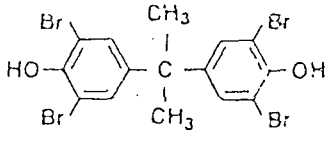
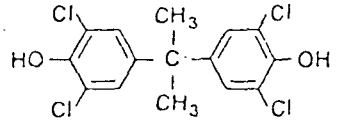
Class II (continued)

O-CHLOROPHENOL	
2-CHLORO-4-PHENYLPHENOL	
4-CHLORORESORCINOL	
2,6-DIBROMO-4-NITROPHENOL	
3,5-DICHLOROSALICYLIC ACID	
2,6-DIIODO-4-NITROPHENOL	

(continued)

TABLE 7 (continued)

Class II (continued)

3 ,5-DIIODOSALICYLIC ACID	
O-FLUOROANISOLE	
O-FLUOROPHENOL	
TETRABROMOBISPHENOL -A	
TETRACHLOROBISPHENOL-A	

Class III

3-Amino-5-chloro-2-hydroxybenzenesulfonic acid
2-Amino-4-chloro-6-nitrophenol
o-Anisidine
Benzaldehyde
Bromobenzene
o-Bromofluorobenzene

(continued)

TABLE 7 (continued)

Class III (continued)
o-Chlorofluorobenzene
3-Chloro-4-fluoro-nitrobenzene
3-Chloro-4-fluorophenol
4-Chloro-2-nitrophenol
Chloropentafluorobenzene
2,4-Dibromofluorobenzene
3,4-Dichloroaniline
o-Dichlorobenzene
3,4-Dichlorobenzaldehyde
3,4-Dichlorobenzotrichloride
3,4-Dichlorobenzotrifluoride
1,2-Dichloro-4-nitrobenzene
3,4-Dichlorophenylisocyanate
3,4-Difluoroaniline
o-Difluorobenzene
1,2-Dihydroxybenzene-3,5-disulfonic acid, disodium salt
2,5-Dihydroxybenzenesulfonic acid
2,5-Dihydroxybenzenesulfonic acid, potassium salt
2,4-Dinitrophenol
2,4-Dinitrophenoxyethanol
3,5-Dinitrosalicylic acid
Fumaric acid
Hexabromobenzene
Hexachlorobenzene
Hexafluorobenzene
Maleic acid
Maleic anhydride
o-Nitroanisole
2-Nitro-*p*-cresol
o-Nitrophenol
Pentabromochlorocyclohexane
Pentabromoethylebenzene
Pentabromotoluene
Pentachloroaniline
Pentafluoroaniline
o-Phenetidine,
Phenol (from chlorobenzene)
1-Phenol-2-sulfonic acid, formaldehyde condensate
Phenyl ether
Phthalic anhydride
Picric acid
Sodium picrate
Tetrabromophthalic anhydride
1,2,4,5-Tetrachlorobenzene
Tetrachlorophthalic anhydride
Tetrafluoro-*m*-phenylenediamine
Tribromobenzene
1,2,4-Trichlorobenzene
2,4,6-Trinitroresorcinol

Alliance Chemical Inc. Documents and Comments Concerning CERCLA 104(e) Response

Submitted by
Maxus Energy Corporation
Responding on behalf of
Occidental Chemical Corporation

December 5, 1994

Steven L. Huntley
Stroudwater Crossing
1685 Congress Street
Portland, Maine 04102

November 30, 1994

Amanda G. Birrell, Esq.
Vinson & Elkins
One American Center
600 Congress Avenue
Austin, TX 78701-3200

Subject: 104(e) Letter Sent to Alliance Chemical

Dear Amanda:

I reviewed the 104(e) letter sent by the United States Environmental Protection Agency (EPA) to Alliance Chemical, as well as Alliance Chemical's response to the EPA letter dated January 28, 1994. In their response to EPA's question regarding the production of 5-chloro-2,4-dimethoxyaniline, Alliance Chemical indicated that the first step in the synthesis of this product was the alkaline hydrolysis of 5-nitro-1,2,4-trichlorobenzene in sodium hydroxide and methanol. It is my opinion that the alkaline hydrolysis of 5-nitro-1,2,4-trichlorobenzene in sodium hydroxide and methanol generated 2,3,7,8-TCDD.

The alkaline hydrolysis of 5-nitro-1,2,4-trichlorobenzene in sodium hydroxide and methanol is analogous to the alkaline hydrolysis of 1,2,4,5-tetrachlorobenzene to produce 2,4,5-trichlorophenol (TCP). The reaction of two TCP molecules under alkaline conditions results in the generation of 2,3,7,8-TCDD. As shown in the attached figure, TCP, and consequently 2,3,7,8-TCDD, may also be formed by the alkaline hydrolysis of 5-nitro-1,2,4-trichlorobenzene.

The only difference between the alkaline hydrolysis of 5-nitro-1,2,4-trichlorobenzene in sodium hydroxide and methanol and the alkaline hydrolysis of 1,2,4,5-tetrachlorobenzene to produce TCP is that the leaving group on the 1,2,4,5-tetrachlorobenzene molecule is a chlorine (Cl^-) and the leaving group on the 5-nitro-1,2,4-trichlorobenzene molecule is a nitro group (NO_2^{-2}). Whether or not the reaction actually occurs is dependent upon the characteristics of the leaving group. A good leaving group must be able to leave the molecule as a stable, weakly basic molecule or ion (Solomons, 1988). The stable molecular ions produced from the hydrolysis of 1,2,4,5-tetrachlorobenzene and 5-nitro-1,2,4-trichlorobenzene are hydrochloric acid (HCl) and nitrous acid (HNO_2^-), respectively. Both HCl and HNO_2^- are sufficiently stable ions under these conditions for the reactions to occur.

It is true that the alkaline hydrolysis of 1,2,4,5-tetrachlorobenzene to produce TCP will produce more 2,3,7,8-TCDD than the alkaline hydrolysis of 5-nitro-1,2,4-trichlorobenzene in sodium hydroxide and methanol. Because HCl is a weaker base than HNO_2^-, Cl^- is a stronger leaving group and, consequently, hydrolysis of 1,2,4,5-tetrachlorobenzene will occur to a greater extent than that of 5-nitro-1,2,4-trichlorobenzene. However, significant amounts of 2,3,7,8-TCDD would be generated by either reaction. As a Class II organic chemical, the EPA (1980) considers 5-nitro-1,2,4-trichlorobenzene "to be conducive to formation of halogenated dioxins."

Some of the other processes described in Alliance's response, namely the production of 2-chloro-1,4-diethoxy-5-nitrobenzene, 2-methoxy-5-nitrobenzenamine, and 2,5-diethoxy-4-(4-morpholinyl)-benzenediazonium tetrachlorozincate, also have a potential to generate dioxins. However, the relative amounts generated in these processes would not be as significant as the amounts of 2,3,7,8-TCDD generated by the production of 5-chloro-2,4-dimethoxyanaline. Structurally, several of the reactants used in these processes are similar to those described as Class II and Class III dioxin precursors (i.e., 2-chloro-1,4-diethoxy-5-nitrobenzene) by the EPA (1980).

The production of 5-chloro-2,4-dimethoxyaniline, 2-chloro-1,4-diethoxy-5-nitrobenzene, and 2-methoxy-5-nitrobenzenamine all involved filtration processes to purify the product. Because these processes are designed primarily to prevent the loss of product rather than to control pollution, very small particles can be expected to pass through the filter. Many of the organic byproducts generated by these processes, such as dioxins, bind strongly to small particulates, would pass through the filters, and therefore would be a part of the filtrate discharged as process effluent. The substantial organic content of the filtrate would tend to solubilize compounds that are otherwise considered insoluble in water, such as dioxins. Consequently, dioxins and other byproducts formed by these processes could be carried into the process effluent either bound to particles or dissolved in the filtrate.

Other byproducts, as well as products, manufactured by Alliance are also defined by EPA as hazardous substances. According to 40 CFR 261, chlorobenzene (hazardous waste number U037), nitrobenzene (hazardous waste number U169), aniline (hazardous waste number U012), and chlorinated benzenes Not Otherwise Specified (N.O.S) are hazardous constituents. Such compounds include commodities mass produced by Alliance, namely 2-chloro-1,4-diethoxy-5-nitrobenzene, 5-chloro-2,4-dimethoxyaniline, and 2-methoxy-5-nitrobenzenamine. Additional nitrobenzenes and chlorinated benzenes are introduced into the processes by which these compounds are made, such as 2-chloro-1,4-diethoxy benzene, 5-nitro-1,2,4-trichlorobenzene, and 2,4-dinitro chlorobenzene and are also created as intermediate products, such as 2,5-diethoxy-4-morpholino nitrobenzene and 5-chloro-2,4-dimethoxy nitrobenzene. The processes used by Alliance to manufacture 3,3'-dimethoxy benzidine and 3,3'-dimethyl benzidine, both arylamines, also utilize nitrobenzenes as the starting material. The residual nitrobenzenes and chlorinated benzenes remaining in the aqueous filtrate following product separation would be discharged along with other byproducts.

Another hazardous substance was potentially produced during the diazotization of a secondary amine, a process used by Alliance to manufacture zinc compounds. During this reaction, secondary amines, both aryl and alkyl, react with nitrous acid to yield *N*-nitrosoamines, which usually separate from the reaction mixture as oily yellow liquids (Solomons, 1988). A number of *N*-nitrosoamines, as well as nitrosoamines N.O.S., are listed as hazardous constituents by EPA (40 CFR 261).

In addition, carbon clarification cakes containing cadmium, also classified as a hazardous constituent (40 CFR 261), were disposed of as solid waste, rather than hazardous waste, until 1988.

On a more general note, I am deeply concerned that Alliance did not thoroughly respond to EPA's fourth question. Specifically, this question is intended to reveal all hazardous substances used or produced by Alliance. Based on my review of the 104(e) response, I can confidently state that many more hazardous substances were produced by Alliance than are indicated by the 104(e)

response. If you require a more comprehensive understanding of actual use and production of hazardous substances by Alliance, then you may wish to encourage EPA to issue a second 104(e) letter that more specifically requires Alliance to describe all processes that may be construed as involving hazardous substances.

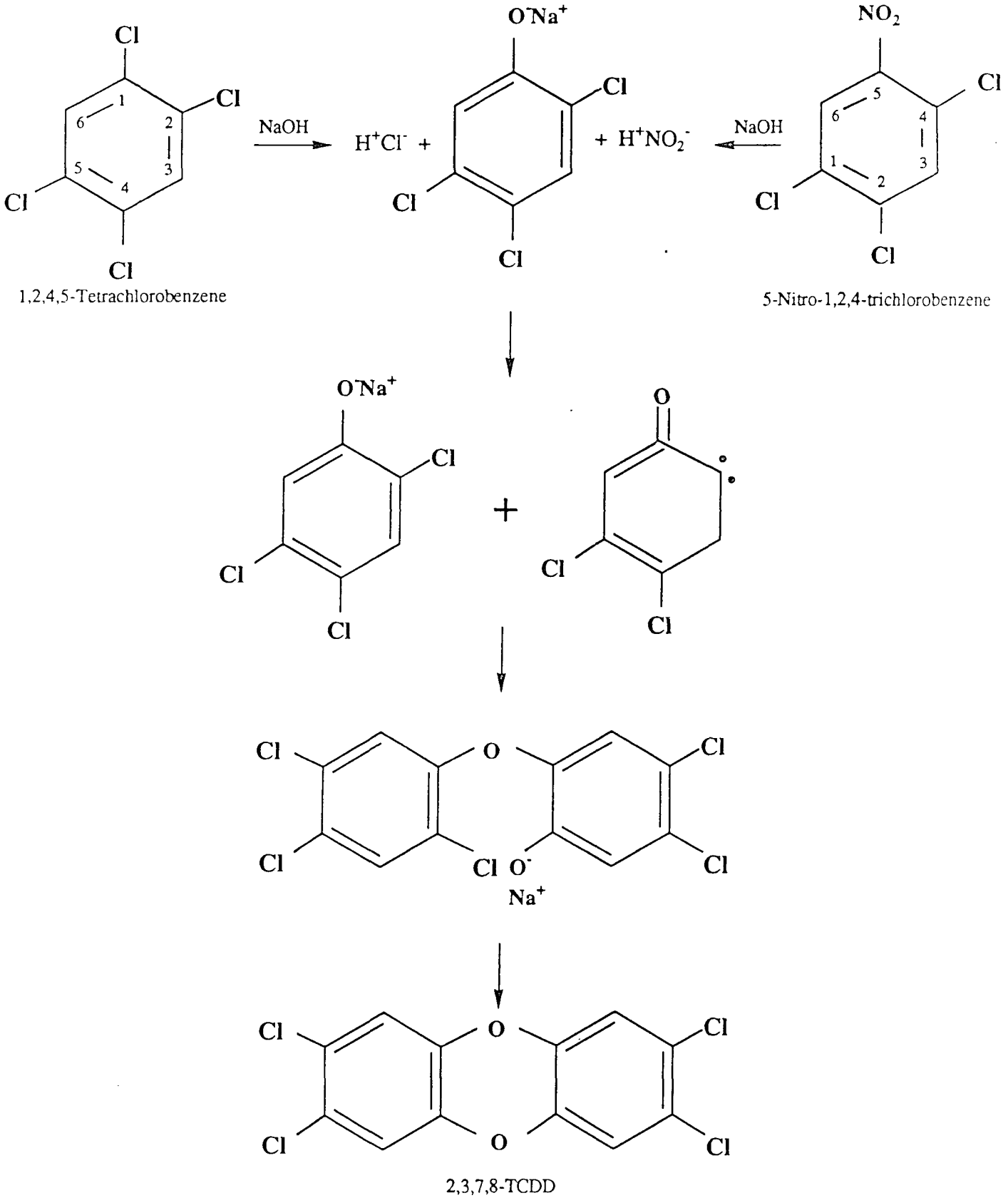
EPA. 1980. Dioxins. U.S. Environmental Protection Agency. Office of Research and Development.
EPA. 1993. Appendix VIII to Part 261: Hazardous Constituents. U.S. Environmental Protection Agency, 40 CFR Parts 260 to 299:91-98.
Solomons, T.W.G. 1988. Organic Chemistry. John Wiley & Sons.

I hope you will find this information useful. Please call me if you have any questions.

Sincerely,

Steve Huntley

Production of 2,3,7,8-Tetrachlorodibenzo-*p*-dioxin (2,3,7,8-TCDD) by Alkaline Hydrolysis of 1,2,4,5-Tetrachlorobenzene and Alkaline Hydrolysis of 5-Nitro-1,2,4-trichlorobenzene



Mechanism adapted from USEPA. 1980. Dioxins.

STEVEN L. HUNTLEY
Senior Health Scientist

Education

M.A.	Public Policy and Management, Edmund S. Muskie Institute of Public Affairs, University of Southern Maine (candidate - expected 1995)
B.S.	Environmental Toxicology, University of California-Davis, 1989

Capabilities

- Human Health Risk Assessment
- PCB/Dioxin Toxicology and Epidemiology
- Chemical Fate and Transport
- Radiometric Sediment Dating
- Cause/Effect Analysis
- Dose-response Modeling
- Environmental Policy Analysis

Experience Summary

Mr. Huntley has extensive experience in chemical toxicology and risk assessment. The toxicology of dioxins and PCBs is an area of particular interest to Mr. Huntley. A considerable amount of his efforts over the past five years have been focused on dioxin contamination of estuarine sediments of a highly industrialized east coast waterway. In addition to these sediment investigations, Mr. Huntley has managed and developed risk assessments involving numerous chemicals including formaldehyde, dioxins, PCBs, PAHs, volatile organics, and metals. Most recently, he has concentrated his efforts on evaluating historical trends in chemical contamination of sediments using radiometric (^{137}Cs and ^{210}Pb) techniques.

Prior to joining ChemRisk, Mr. Huntley worked for over ten years in the electronics industry where he specialized in worker health and safety, hazardous waste management, and chemical process control. While a student at the University of California-Davis, he worked on several research projects developing analytical methods for the trace residue analysis of volatile mutagens and pesticides. Areas of special interest to Mr. Huntley are human epidemiology and the fate and distribution of toxicants in the environment.

Key Projects

Selected project experience for Mr. Huntley includes:

ChemRisk Division, McLaren/Hart 1989 - Present

- Currently manage a major sediment investigation project on the east coast. Among the primary objectives of the multi-task project is the identication of sources of chemical contaminants. Various risk related and agency monitoring activities have been performed in support of possible future litigation and/or regulatory action.

- Supervised the development of health-based cleanup levels for a PCB- and phthalate-contaminated site using probabilistic exposure analysis. The project involved the

determination of soil volumes requiring remediation using several different techniques including area averaging and kriging.

- Managed a multi-facility human health risk assessment of potential dioxin exposures through the consumption of produce grown on agricultural soils amended with a dioxin-containing mineral by-product. Consumption of milk and beef from home-grazed cattle was also evaluated. Characterization of dioxin levels in the by-product was determined for represenative facilities and extrapolated to nearly 30 different facitlies. Each facility was evaluated separately based on facility-specific dioxin concentrations and regional variability in vegetable, milk, and beef consumption rates.

- Investigated the environmental occurrence, formation, and toxicology of polychlorinated dibenzothiophenes (PCDTs). These compounds are sulfur-containing structural analogues of polychlorinated dibenzofurans (PCDFs). Continuing research suggest that these compounds are toxicologically similar to PCDFs and dioxins, and may be found in the environment at substantially higher concentrations than PCDFs and dioxins.

- Evaluated dioxin, PCB, PAH, petroleum hydrocarbon, heavy metal, ^{137}Cs, and ^{210}Pb database for 100 sediment cores collected from an east coast estuary. Supervised the collection and processing of sediment cores and provided analysis and interpretation of data. A major focus of this work was the correlation of sediment contamination with historical sediment deposition.

- Managed a project to assist a client with issues pertaining to the development of a rational water quality standard for TCDD in the State of Florida. Toxicological issues addressed included carcinogenic, reproductive, and immunotoxic effects in humans, as well as the potential for effects in wildlife.

- Successfully argued against using a series of environmental epidemiology studies for setting PCB groundwater standards in Wisconsin. Following initial discussions with the Wisconsin DNR, critiqued a number of epidemiology studies which DNR had relied upon for proposing a PCB groundwater standard that differed from the federal MCL. Under Wisconsin statute, the federal standard must be adopted by the State unless the State can show that there is scientifically valid evidence that was not considered by the EPA in the development of the federal MCL. In September 1991, testified before the Environmental Quality Committee on the validity of the studies in question. Following this testimony and that of the Wisconsin Paper Counsel, the Natural Resources Board voted to table the PCB rule for one year and to appoint a Scientific Advisory Panel made up of individuals from industry, government, and academia to study the issue.

- Managed a project involving potential occupational exposure to dioxins and furans from inhalation of pulp and paper mill fly ash and flue gases. An extensive sampling plan was implemented in order to characterize dioxin and particulate concentrations in flue gas and ambient air, and dioxin concentrations in fly ash and product. Using congener-specific analytical results, process data, and site-specific meteorological data, exposure point concentrations were determined by modeling emissions and dispersion. Human health risks were assessed for workers at the plant.

- Project manager and consultant to major energy resource company proposing installation of a coal-fired cogeneration power plant. Issues addressed for public hearings were the potential formation of toxic compounds by chlorination of river water (i.e., dioxin, chloroform), health risks associated with toxic air contaminants, and health risks associated with electromagnetic fields.

- Reviewed and evaluated labelling requirements related to the discharge of dioxin-containing effluents from pulp and paper mills under California's Proposition 65. Assessment included comprehensive examination of allowable level for reproductive effects from exposure to dioxin and resulted in the proposal of more scientifically based guidelines.

- Evaluated the potential for enhancement of toxic response to intermittent exposure regimens compared to continuous exposure regimens. Acute toxicity and carcinogenic animal studies were investigated for 1,3-butadiene, benzene, 2-acetylaminofluorene, and ethylene oxide.

- Provided technical support for early mortality correction of TCDD oncogenicity study. Survival analysis and statistical comparisons were used to verify adjustment of overall incidence rates. Used Global 86 Linearized Multi-Stage Model to derive cancer potency factor for the corrected data.

- Assisted in a major risk assessment of potential health risks to workers and consumers exposed to a formaldehyde-resin based paper product. Formaldehyde emissions from the paper product were modeled for consumers, distribution warehouse workers, and bottling plant workers. Human health risks were assessed for workers and consumers.

- Participated in the assessment of potential health risks associated with the consumption of fish caught from the Columbia River. A statistically based fish sampling program was conducted on the Columbia River to assess the extent of dioxin contamination in five fish species. Regional fish consumption rates were used to assess potential health risks to several sub-populations of fishermen.

- Collaborated on technical review of an Endangerment Assessment for a USEPA Region 9 CERCLA site. Based on a revised risk assessment for the site, alternative cleanup goals were proposed for polyaromatic hydrocarbons and arsenic.

Department of Environmental Toxicology, UC Davis 1988-1989

- Developed HPLC and GC methods for the analysis of the herbicide Naptalam in complex water matrices. Compared the use of solid phase adsorbents and several solvents for the extraction of this compound from natural water.

- Assisted in the development of analytical methods for the extraction of model volatile mutagens such as methylene chloride, ethylene dibromide, and several polycyclic aromatic hydrocarbons. Analyzed experimental air samples by GC-EC to determine percent recoveries. Evaluated several different resins for optimum recoveries and began preliminary work on supercritical fluid extraction from XAD resin for application to the Ames Bioassay.

General Circuits Inc., Menlo Park, CA 1981-1985

- Managed all facility operations relating to the manufacture of printed circuit boards.
- Worked closely with the California Department of Health Services regarding compliance with regulations for the storage and treatment of hazardous wastes.
- Developed a worker safety program under Cal-OSHA regulations. This involved noise level, formaldehyde and methylene chloride air monitoring, respirator training, and exhaust duct testing and calibration. Initiated a worker awareness program utilizing Material Safety Data Sheets and "on the job" safety training.

Publications

Huntley, S.L., R.J. Wenning, D.J. Paustenbach, A.S. Wong, W.J. Luksemburg. Potential sources of polychlorinated dibenzothiophenes in the Passaic River, New Jersey. *Chemosphere* 29(2):257-272.

Michaud, J.M., S.L. Huntley, R.A. Sherer, M.N. Gray, D.J. Paustenbach. 1994. PCB and dioxin re-entry criteria for building surfaces and air. *Journal of Exposure Analysis and Environmental Epidemiology* 4(2):197-227.

Bonnevie, N.L., S.L. Huntley, B.W. Found, R.J. Wenning. 1994. Trace metal contamination in surficial sediments from Newark Bay, New Jersey. *Sci. Total Environ.* 144:1-16.

Wenning, R.J., N.L. Bonnevie, S.L. Huntley. 1994. Accumulation of metals, polychlorinated biphenyls, and polycyclic aromatic hydrocarbons in sediments from the lower Passaic River, New Jersey. *Arch. Environ. Contam. Toxicol.* 27:64-81.

Huntley, S.L., N.L. Bonnevie, H. Bedbury, R.J. Wenning. 1993. The distribution of polycyclic aromatic hydrocarbons (PAHs) in three New Jersey waterways. *Bull. Env. Contam. Toxicol.* 51:865-872.

Bonnevie, N.L., R.J. Wenning, S.L. Huntley, H. Bedbury. 1993. Distribution of inorganic compounds in sediments from three waterways in Northern New Jersey. *Bulletin of Environmental Contamination and Toxicology* 51:672-680.

Huntley, S.L., J.M. Michaud, D. Jeffery, R.E. Keenan. 1991. Vapor-phase dioxin emissions associated with the pelletization of pulp and paper mill sludge. In: Proceedings of TAPPI '91 Environmental Conference.

Huntley, S.L., R.J. Wenning, N.L. Bonnevie, R.E. Keenan, D.J. Paustenbach, D. Adams. 1991. Scientific evaluation of natural resource damage claims associated with PCDD and PCDF contamination in the aquatic environment. In: Proceedings of TAPPI '91 Environmental Conference.

Parsons, A.H., S.L. Huntley, E.S. Ebert, E.R. Algeo, R.E. Keenan. 1991. Risk assessment for dioxin in Columbia River fish. *Chemosphere.* 23(11-12):1709-1717.

Finley, B., R.J. Wenning, M.J. Ungs, S. Huntley, D.J. Paustenbach. 1990. PCDDs and PCDFs in surficial sediments from the lower Passaic River and Newark Bay. Proceedings to Dioxin '90 Conference.

Abstracts

Bonnevie, N.L., S.L. Huntley, R.J. Wenning. 1993. Distribution of inorganic compounds in sediments from the Newark Bay watershed. SETAC '93. Abstract #P164

Wenning, R.J., J.D. Tull, N.L. Bonnevie, S.L. Huntley, H. Bedbury. 1993. A pollution history of Newark Bay, New Jersey, as recorded in sediment cores. Accepted for presentation at the IAWPRC Symposium on Contaminated Aquatic Sediments, Milwaukee, WI. June 14-16.

Wenning, R.J., Bonnevie, N.L., J.D. Tull, S.L. Huntley. 1992. Spatial extent and sources of toxic chemicals in sediments from Newark Bay. Abstract #13519. *SETAC Thirteenth Annual Meeting*, Pensacola, FL. Nov. 8-12.

Wenning, R.J., D.G. Gunster, N. L. Bonnevie, S.L. Huntley. 1992. Nonpoint source loadings of toxic chemicals to Newark Bay. Abstract #27038. *SETAC Thirteenth Annual Meeting*, Pensacola, FL. Nov. 8-12.

Presentations

Huntley, S.L. 1994. Environmental Management: viewpoint from the middle — an environmental consulting firm. Guest lecturer at University of Maine, Department of Chemical Engineering. April 18.

Huntley, S.L. 1992. Introduction to risk assessment. Guest lecturer at Maine Toxicology Institute, University of Maine. August 7.

Huntley, S.L. 1991. Instructor for pulp and paper mill educational program on dioxin exposure and toxicology. June 24-29.

Huntley, S.L. 1991. Risk estimates for 2,3,7,8-TCDD 1978 and 1990 histopathology interpretations of the Kociba et al. bioassay using a biologically-based cancer model. Oral presentation at the 1991 TAPPI Environmental Conference. San Antonio Texas. April 7-10.

Huntley, S.L. 1991. Vapor-phase dioxin emissions associated with the pelletization of pulp and paper mill sludge. Oral presentation at the 1991 TAPPI Environmental Conference. San Antonio, Texas. April 7-10,

Huntley, S.L. 1991. An evaluation of the TCDD cancer potency using a biologically-based cancer model. Oral presentation at Maine Biological and Medical Science Seminar. Farmington, Maine. May 30.

Huntley, S.L., N.L. Bonnevie, A.H. Parsons. 1991. Potential impacts resulting from using chlorinated river water in a once-through cooling system. Presented at the 17th Annual Maine Biological and Medical Sciences Symposium, May 30.

Professional Affiliations

Society of Environmental Toxicology and Chemistry

07-14-13

A MEMBER OF THE ENVIRONMENTAL RESOURCES MANAGEMENT GROUP

Supplemental Investigative Activities Report and Proposed Soil Sampling Plan

Alliance Chemcial, Inc.
Site A
Essex County
Newark, New Jersey

March 1994

ERM, Inc.
855 Springdale Drive
Exton, Pennsylvania 19341

ERM

943390023

TABLE OF CONTENTS

LIST OF FIGURES

LIST OF ATTACHMENTS

Section 1

1.0 INTRODUCTION

Alliance Chemical, Inc. (the facility) is located at 309-327 Avenue P, Newark, Essex County, New Jersey (Figure 1-1). On October 19, 1989, NJDEPE personnel collected 13 soil samples from the Alliance Chemical Inc. facility. The analytical results from this sampling event indicated that a few of the samples were potentially affected with semi-volatile organic compounds and metals. Alliance Chemical agreed with the NJDEPE to perform supplemental sampling of the areas of concern. For the purpose of performing the supplemental investigative soil sampling activities, the Alliance Chemical Inc. facility has been divided into three separate areas, A, B and C (Figure 1-2).

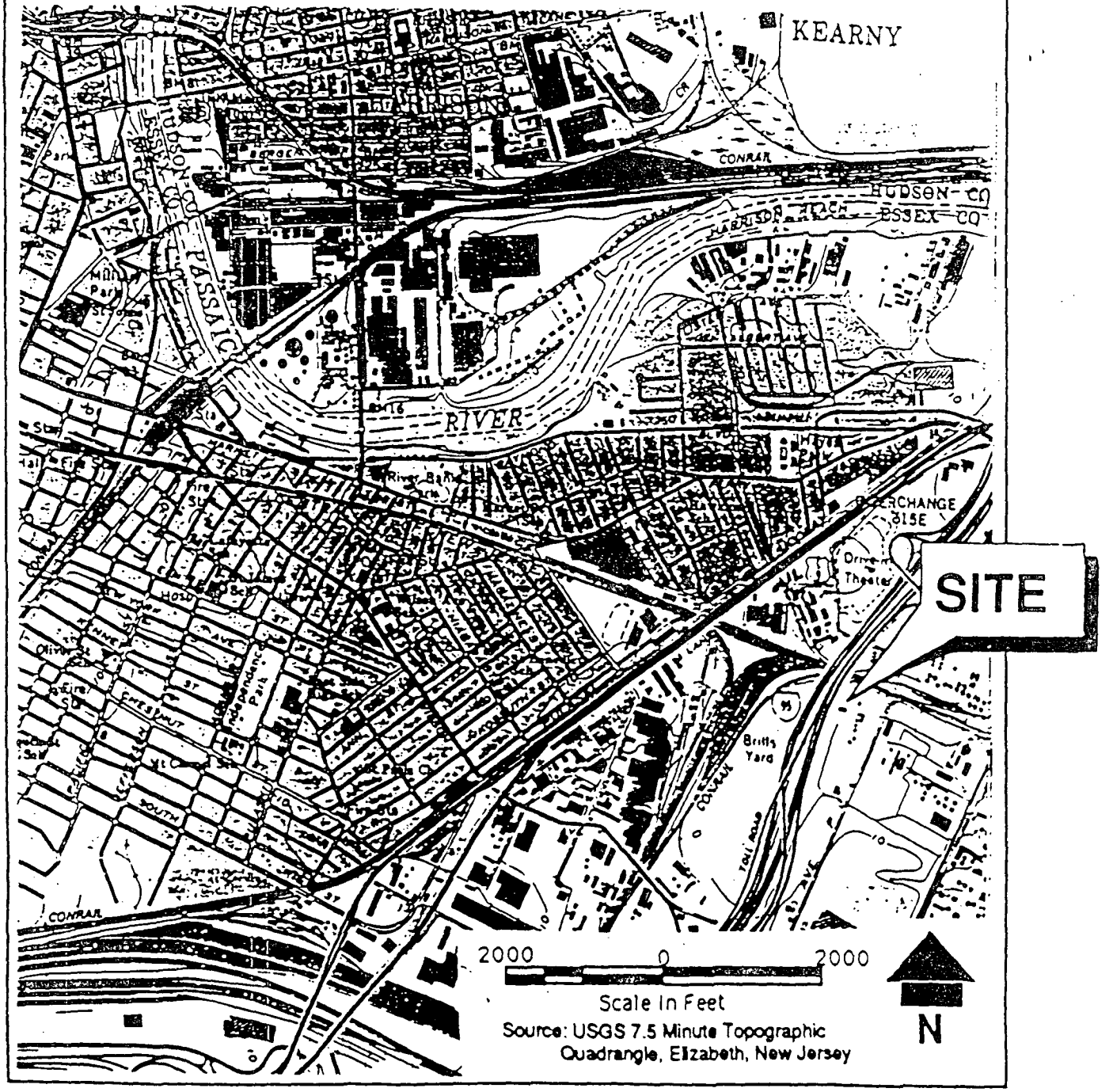
Alliance Chemical Inc. has entered into a Memorandum of Agreement (MOA) with the NJDEPE for Area A which requires Alliance Chemical, Inc. to submit a Supplemental Investigative Activities Report and Soil Sampling Plan to the NJDEPE. This work effort and proposed soil sampling plan has focused on Area A. Area B and C will be addressed sequentially following the work in Area A. For the purpose of conducting a supplemental field sampling investigation, Alliance Chemical, Inc. has retained the services of Environmental Resources Management, Inc. (ERM) to prepare a Supplemental Investigative Activities Report and Soil Sampling Plan, and perform supplemental investigative activities in Area A. Supplemental investigative activities include the review of aerial photographs, a well search, and a case index study. In addition, the proposed soil sampling activities are located in Section 2.

1.1 SITE DESCRIPTION

1.1.1 *Site Description and Environmental Setting*

Area A is located in the southwestern corner of the facility. Area A is open and mostly covered with vegetation. The western edge of Area A borders the New Jersey Turnpike. A drainage channel for surface water runoff is located along this border. The drainage channel appears to run from north to south. The northern boundary of Area A borders adjacent Area B, as shown on Figure 1-2. The eastern boundary of Area A borders an asphalt paved area. There are two buildings in this paved area. The first building is a Metal Shed. The second is a two story brick building.

Figure 1-1
Site Location Map
Alliance Chemical, Inc.
Newark, NJ



Four (4) above ground storage tanks are situated along the two story brick building located within the western side and in the northeast corner of Area A. The southern perimeter of Area A borders an adjoining property. This adjoining property was used by the City of Newark as a municipal landfill. The landfill is closed.

Alliance Chemical Inc. is located in a commercial/industrial area of Newark, NJ. Area A is located in the southwestern corner of the property. Based on the review of aerial photographs from 1940 to 1991, Area A has been utilized as a commercial/industrial storage area since the 1940s.

1.1.2 *Summary of Aerial Photograph Reconnaissance Review*

On 27 December 1993, ERM completed an aerial photo review of Area A. Aerial photograph stereo pairs from 1940, 1951, 1953, 1971, 1972, 1974, 1978, 1986, and 1991 were examined at the New Jersey Department of Environmental Protection and Energy (NJDEPE) Photo and Map Library. The following descriptions are given based on visual observations. In addition, site-specific visual observations and site-specific visual features have been described for each photographic review. Attachment A shows the site-specific figures and site-specific observations for each photographic review.

Generally, Area A did not change drastically over the time period from 1940 to 1991. Area A appears to be flat and open with no visible dense vegetation, such as brush and trees. Area A is generally covered with grass-like vegetation and appears to have been used as an equipment storage area. A small drainage channel is visible paralleling Area A's western border with the NJ Turnpike. A fence is present along Area A's southern and western border.

Attachment A1 provides detailed descriptions of each aerial photograph reviewed and Attachment A2 provides figures showing pertinent visual observations identified in each aerial photograph reviewed.

1.2.3 *NJDEPE Well Record Search*

ERM conducted a well record search in order to locate and identify all permitted wells within a 1-mile radius of the facility. This well search was performed on 21 and 22 December 1993. Well records were obtained by utilizing the NJDEPE Bureau of Water Allocation data base.

A total of 640 permitted wells were identified within a 1 - mile radius of the facility. Due to the massive quantity of wells, ERM focused on those permitted wells within a 1/4 - mile radius of the site. There are a total of 113 ground water wells within a 1/4 - mile radius of the facility. Of these 113 wells, 80 are used for ground water monitoring purposes, the use of 26 of the wells were not identified, 4 are used as recovery wells, and 3 are used as Interceptor wells.

Well records for wells located within a 0-1/4 mile radius of the facility are located in Attachment B. A well location map is located on Figure 1-3.

1.2.4 *Case Index Study*

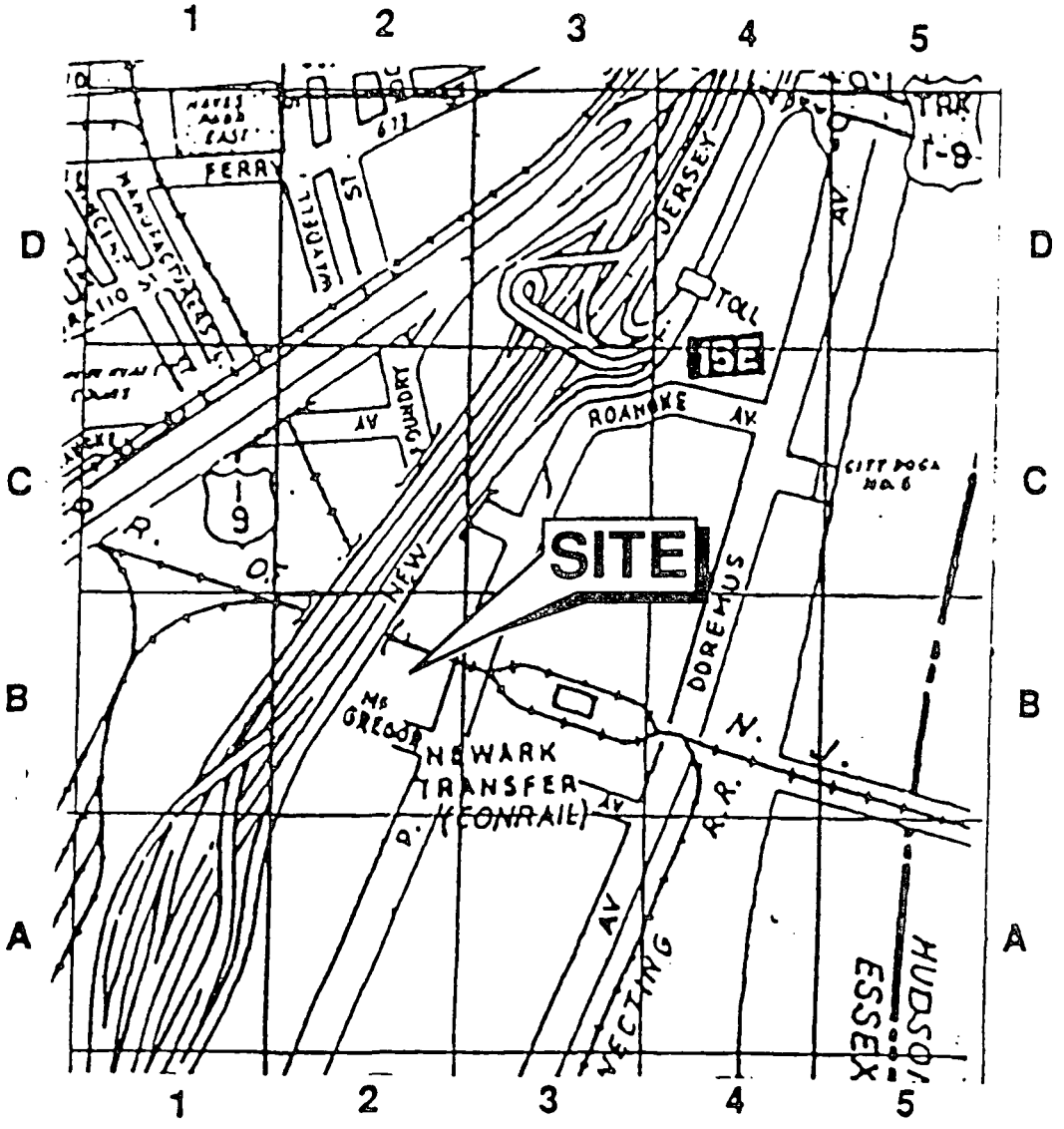
Due to the inordinately large number of surrounding industrial sites with evidence of on-going ground water monitoring, a data base identifying all federal and state sites that are actually or potentially contaminated and presenting a possible threat to human health and the environment was assembled and is located in Attachment C.

ERM utilized the services of VISTA Environmental Information, Inc. (VISTA), to conduct a search of federal and state (New Jersey) data available on computer.

The Facility Index System (FINDS) database is a master database listing of all facilities which are a part of any of the many databases maintained by the EPA. It is cross-referenced to all of the databases listed below as well as a number of other databases.

The VISTA search did not provide detailed descriptions of specific contaminants or whether soil, ground water, or both are contaminated on the sites. ERM has prepared a letter to request this information based on the Freedom of Information Act (FOIA). When this information is received, a map correlating the VISTA sites within a 0-1/4 mile radius of the site will be prepared.

Figure 1-3
Well Search Plot
0 - 0.25 Mile Radius
Alliance Chemical
Newark, New Jersey



Block No.	No. of Wells Located in the Block: Monitoring	Supply/ Receiving	NA	Total
A2	7			7
A3	5			5
B2	10		10	20
B3	23	2		25
C2	1			1
C3	34	5	16	55

N

1,100 0 1,100

Scale in Feet

Section 2

2.0 *PROPOSED SOIL SAMPLING PLAN*

On October 19, 1989, NJDEPE personnel collected 13 soil samples from the Alliance Chemical Inc. facility located in Newark, NJ. The analytical results from this sampling event indicated that a few of the samples were pontentially affected with semi-volatile organic compounds and metals. Alliance Chemical Inc. has entered into a MOA for Area A which requires a Soil Sampling Plan to be submitted to the NJDEPE for review. Section 2.0 PROPOSED SOIL SAMPLING PLAN consists of two subsections. The first subsection reveals the proposed soil sample locations. The proposed soil sample locations were strategically located after the review of all information identified in Section 1.0 (aerial photographs, well search, case index study). The second subsection proposes the analytical parameters that each soil sample will be tested for.

2.1 *PROPOSED SOIL SAMPLE LOCATIONS*

ERM proposes to collect five (5) site-specific surface soil samples from the 0 to 6-inch depth increment. The soil sample locations indicated on Figure 2-1 as SS-14, SS-15, SS-16, SS-17, and SS-18. All soil samples will be collected using a properly decontaminated stainless-steel hand trowel. All samples will be collected pursuant to the protocols and guidelines established in N.J.A.C. 7:26E NJDEPE-Technical Requirements for Site Remediation and Quality Assurance/Quality Control (QA/QC) methodologies outlined in NJDEPE's Field Sampling Procedures Manual-May 1992.

2.2 *PROPOSED ANALYSIS*

All soil samples will be analyzed for Target Compound List (TCL) semi-volatile compounds with a forward library search for tentatively identified compounds (TICs) using GC/MS; TCL PCB's, and the Target Analyte List (TAL) inorganic constituents beryllium, cadmium, lead, and zinc. This analysis is being proposed based upon existing analytical data from sampling performed by the NJDEPE in 1989 which indicated several samples in Area A were potentially affected by semi-volatile organic compounds and metals.

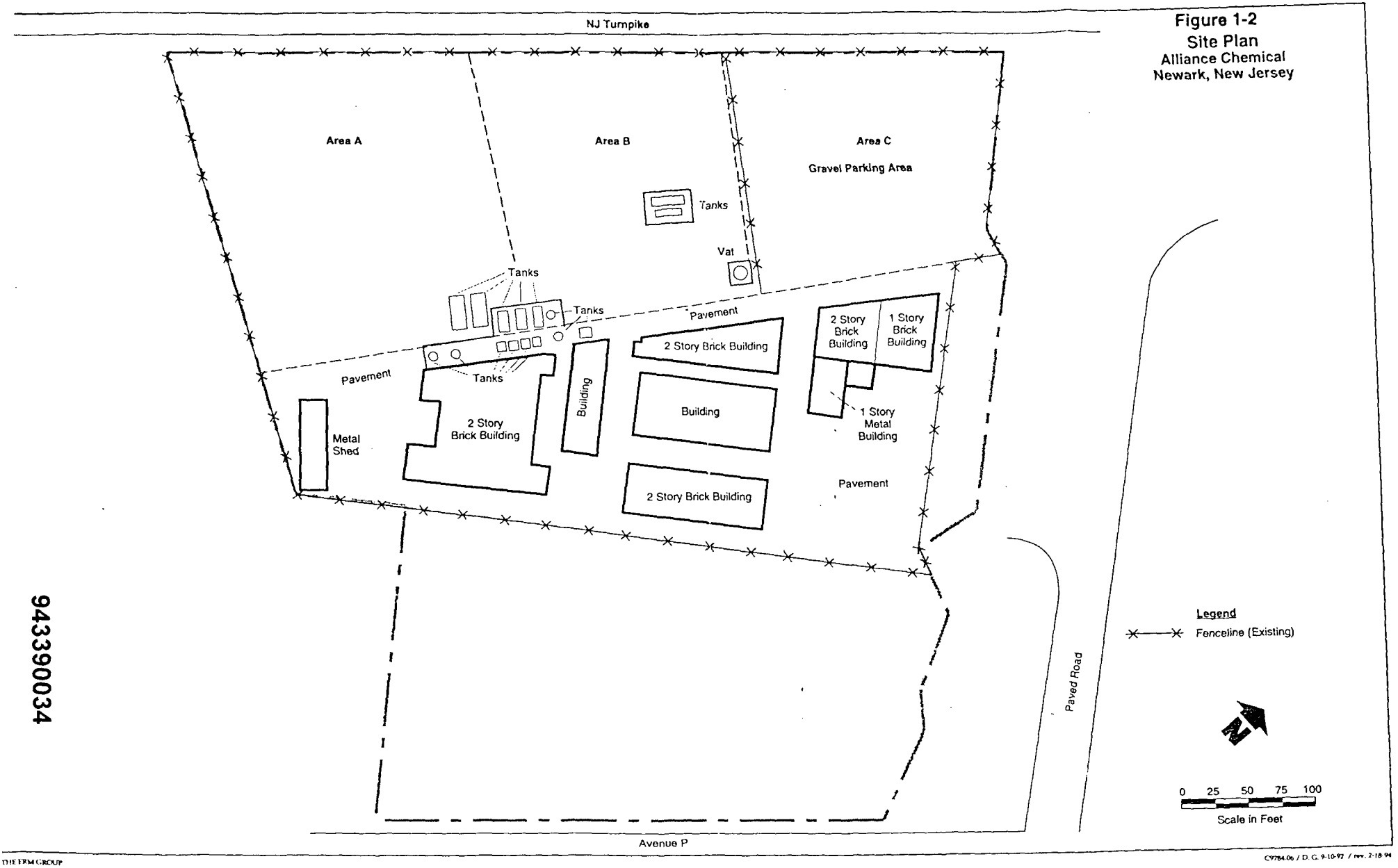


Figure 1-2
Site Plan
Alliance Chemical
Newark, New Jersey

Four (4) above ground storage tanks are situated along the two stc building located within the western side and in the northeast corn Area A. The southern perimeter of Area A borders an adjoining property. This adjoining property was used by the City of Newark as a municipal landfill. The landfill is closed.

Alliance Chemical Inc. is located in a commercial/industrial area of Newark, NJ. Area A is located in the southwestern corner of the property. Based on the review of aerial photographs from 1940 to 1991, Area A has been utilized as a commercial/industrial storage area since the 1940s.

Summary of Aerial Photograph Reconnaissance Review

On 27 December 1993, ERM completed an aerial photo review of Area A. Aerial photograph stereo pairs from 1940, 1951, 1953, 1971, 1972, 1974, 1978, 1986, and 1991 were examined at the New Jersey Department of Environmental Protection and Energy (NJDEPE) Photo and Map Library. The following descriptions are given based on visual observations. In addition, site-specific visual observations and site-specific visual features have been described for each photographic review. Attachment A shows the site-specific figures and site-specific observations for each photographic review.

Generally, Area A did not change drastically over the time period from 1940 to 1991. Area A appears to be flat and open with no visible dense vegetation, such as brush and trees. Area A is generally covered with grass-like vegetation and appears to have been used as an equipment storage area. A small drainage channel is visible paralleling Area A's western border with the NJ Turnpike. A fence is present along Area A's southern and western border.

Attachment A1 provides detailed descriptions of each aerial photograph reviewed and Attachment A2 provides figures showing pertinent visual observations identified in each aerial photograph reviewed.

NJDEPE Well Record Search

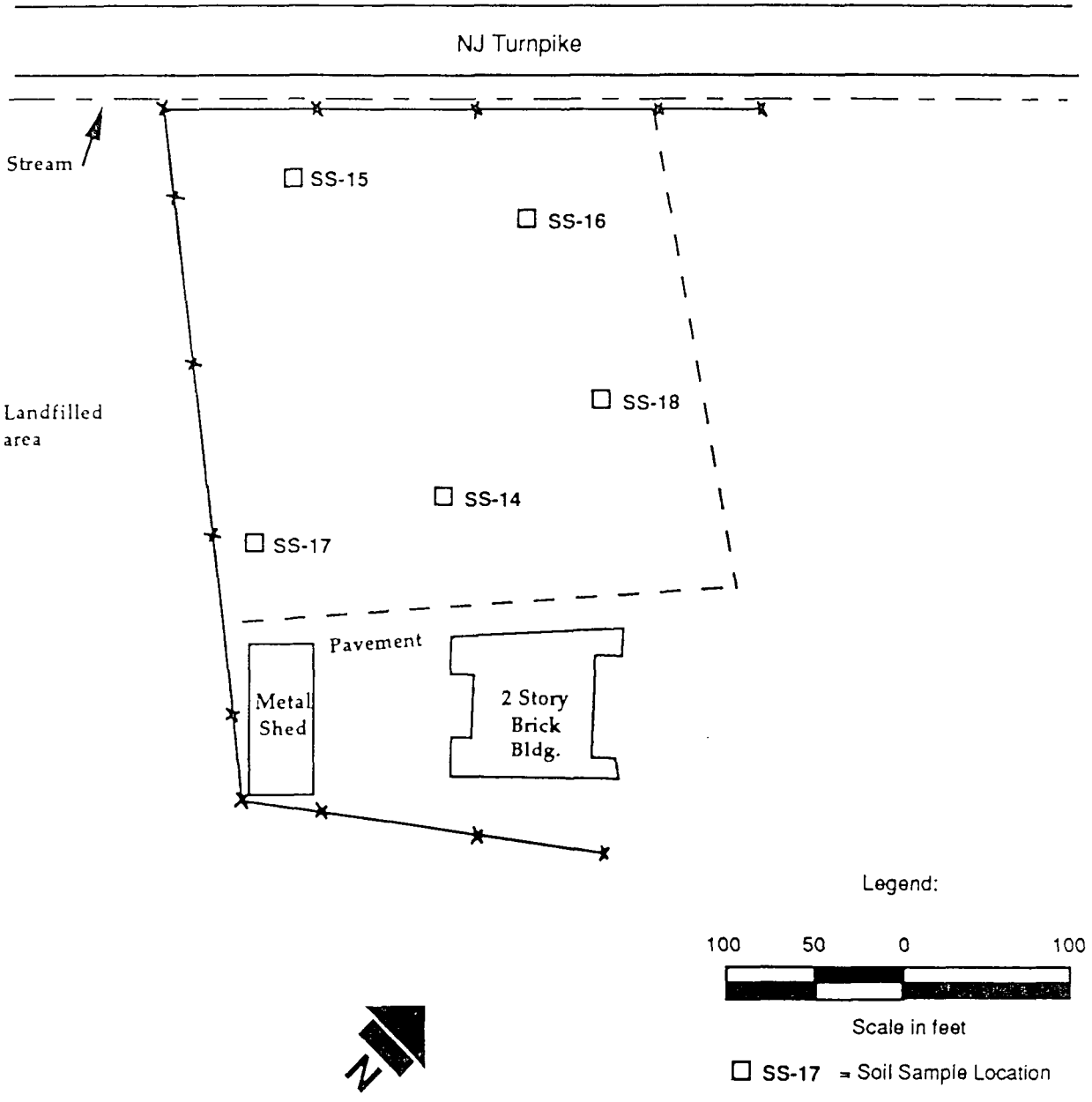
ERM conducted a well record search in order to locate and identify all permitted wells within a 1-mile radius of the facility. This well search was performed on 21 and 22 December 1993. Well records were obtained by utilizing the NJDEPE Bureau of Water Allocation data base.

All soil samples will be analyzed at a NJDEPE-certified laboratory. All analytical results will be presented in formats consistent with the Technical Requirements for Site Remediation.

2.3 *PROPOSED SCHEDULE*

Upon approval, the Supplemental Sampling Plan will be implemented. The anticipated schedule indicates that field sampling, analysis, data reduction, interpretation, and report preparation will take approximately 12 weeks.

Figure 2-1
Proposed Soil Sample Location Plan
Alliance Chemical, Inc
Newark, NJ
Area - A



A

Attachment A1
Aerial Photography Summaries

The following detailed observations are provided to identify any areas of potential concern. The proposed soil sample locations were derived based on these observations, known site-specific physical features, and past site-specific practices conducted in Area A.

APRIL 6, 1940 - Black and White

Area A appears to be flat, open and undeveloped. Grass covers most of Area A. A small stream is present paralleling the western border of the site and a grassy area which will be the future location of the NJ Turnpike. A small road is visible along the eastern boundary.

APRIL 7, 1951 - Black and White

Area A appears to be flat, open and undeveloped. A shallow ponded water area covers the majority of Area A. The NJ Turnpike is under construction along Area A's western boundary. This ponded area has small channels feeding it from the slopes along the eastern side of the NJ Turnpike embankment. These channels look like the result of slope erosion caused by rain. A small drainage channel is visible paralleling the site border with the NJ Turnpike. A small road is visible along Area A's eastern boundary.

APRIL 23, 1951 - Black and White

Area A appears to be flat, open and undeveloped. Grass covers most of Area A. The shallow ponded area is no longer visible. The NJ Turnpike is under construction along Area A's western boundary. A small drainage channel is present paralleling the western border of the site adjacent to the toe of the NJ Turnpike embankment. A small road is visible along Area A's eastern boundary.

DECEMBER 5, 1953 - Black and White

Area A appears to be flat, open and undeveloped. Sparse vegetation covers most of Area A. A small drainage channel is present paralleling the western border of the site adjacent to the toe of the NJ Turnpike embankment. A small road is visible along Area A's eastern boundary.

MARCH 31, 1971 - Black and White

Area A appears to be flat, open and undeveloped. Sparse vegetation covers most of Area A. A small drainage channel is present paralleling the western border of the site adjacent to the toe of the NJ Turnpike embankment. A small road is visible along Area A's eastern boundary.

A stockpile of stored materials is visible at Area A's southeastern boundary. The materials appear to be comprised of numerous similar sized objects.

AUGUST 20, 1972 - Color

Area A appears to be flat, open and undeveloped. Sparse vegetation covers most of Area A. A small drainage channel is present paralleling the western border of the site adjacent to the toe of the NJ Turnpike embankment. A small road is visible along Area A's eastern boundary.

The stockpile of stored materials observed in the 31 March 1971 aerial photograph is still present. The size of the stockpile does not appear to have changed nor has the size of the objects. The color of the stockpiled materials was red, reddish-brown, white, black, and blue. It appears that the reddish-brown color is present on many of the objects within the stockpile.

APRIL 11, 1974 Black and White

Area A appears to be flat, open and undeveloped. Sparse vegetation covers most of Area A. A small drainage channel is present paralleling the western border of the site adjacent to the toe of the NJ Turnpike embankment. This drainage channel is slightly wider than in earlier aerial photographs. A small road is visible along Area A's eastern boundary.

The stockpile of stored materials observed in the 31 March 1971 and the 20 August 1972 aerial photographs is no longer visible. There is sparse vegetation present where the stockpile of materials was stored.

SEPTEMBER 6, 1978 Color

Area A appears to be flat, open and undeveloped. Sparse vegetation covers most of Area A. A small drainage channel is present paralleling the western border of

the site adjacent to the toe of the NJ Turnpike embankment. A small road is visible along Area A's eastern boundary.

The ground surface where the stockpile of materials was once stored has little to no vegetative growth present.

MARCH 23, 1986 Color

Area A appears to be flat, open and undeveloped. Sparse vegetation covers most of Area A. A small drainage channel is present paralleling the western border of the site adjacent to the toe of the NJ Turnpike embankment. The small drainage channel is now very narrow. A small road is visible along Area A's eastern boundary.

The ground surface where the stockpile of materials was once stored still has little to no vegetative growth present. This area is approximately one-half the size it was in the 6 September 1978 aerial photograph.

A second section of sparse vegetation is located in the southwestern corner of Area A. This section is long and narrow and positioned parallel to Area A's western border.

MARCH 11, 1991

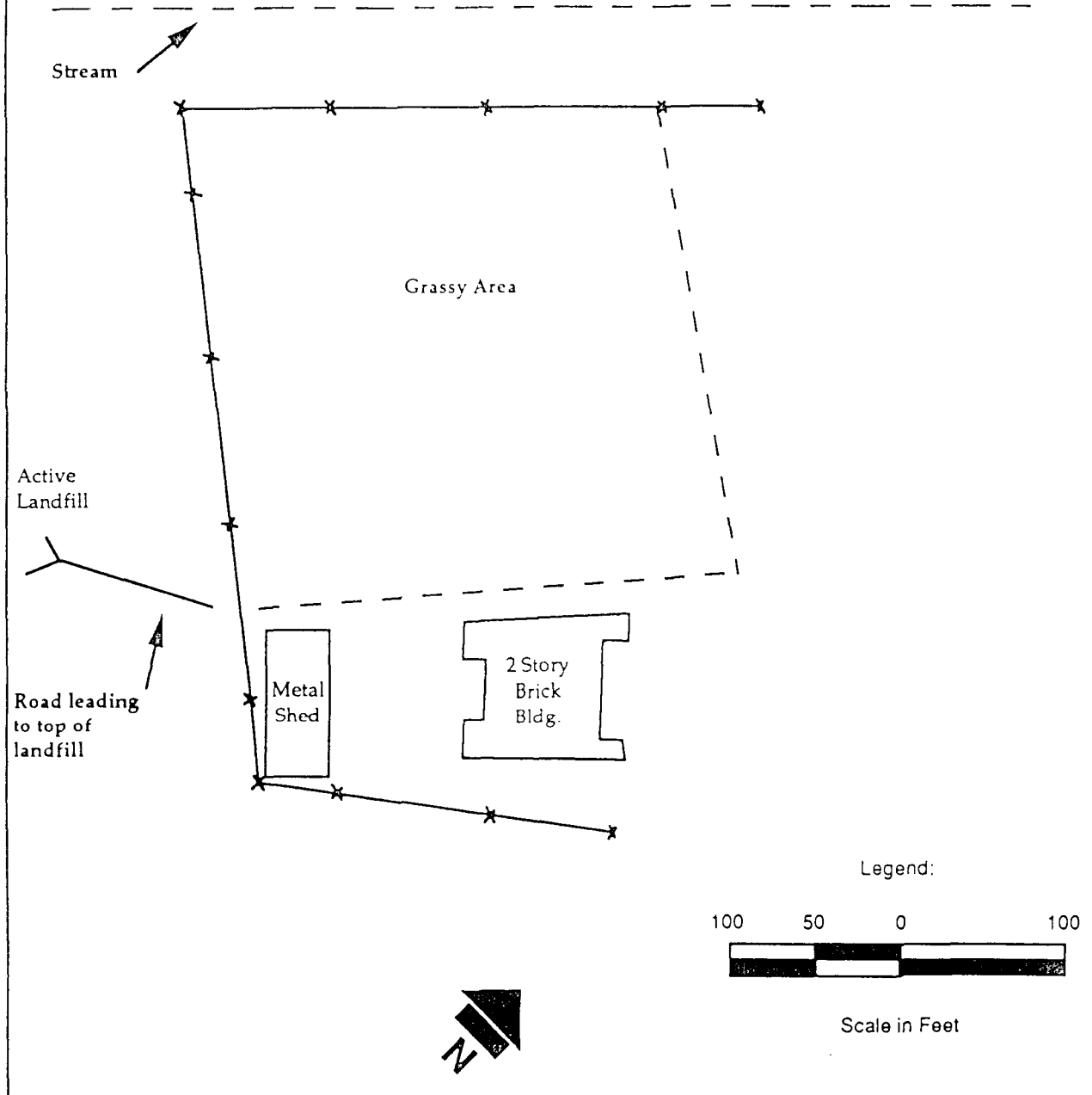
Area A appears to be flat, open and undeveloped. Sparse vegetation covers most of Area A. The small drainage channel is no longer visible paralleling the western border of the site adjacent to the toe of the NJ Turnpike embankment. A small road is visible along Area A's eastern boundary.

The ground surface where the stockpile of materials was once stored has sparse vegetative growth present.

The second section, observed in the 23 March 1986 aerial photograph, is slightly larger than the previous photograph. Vegetative cover has remained unchanged.

Attachment A2
Aerial Photography Figures

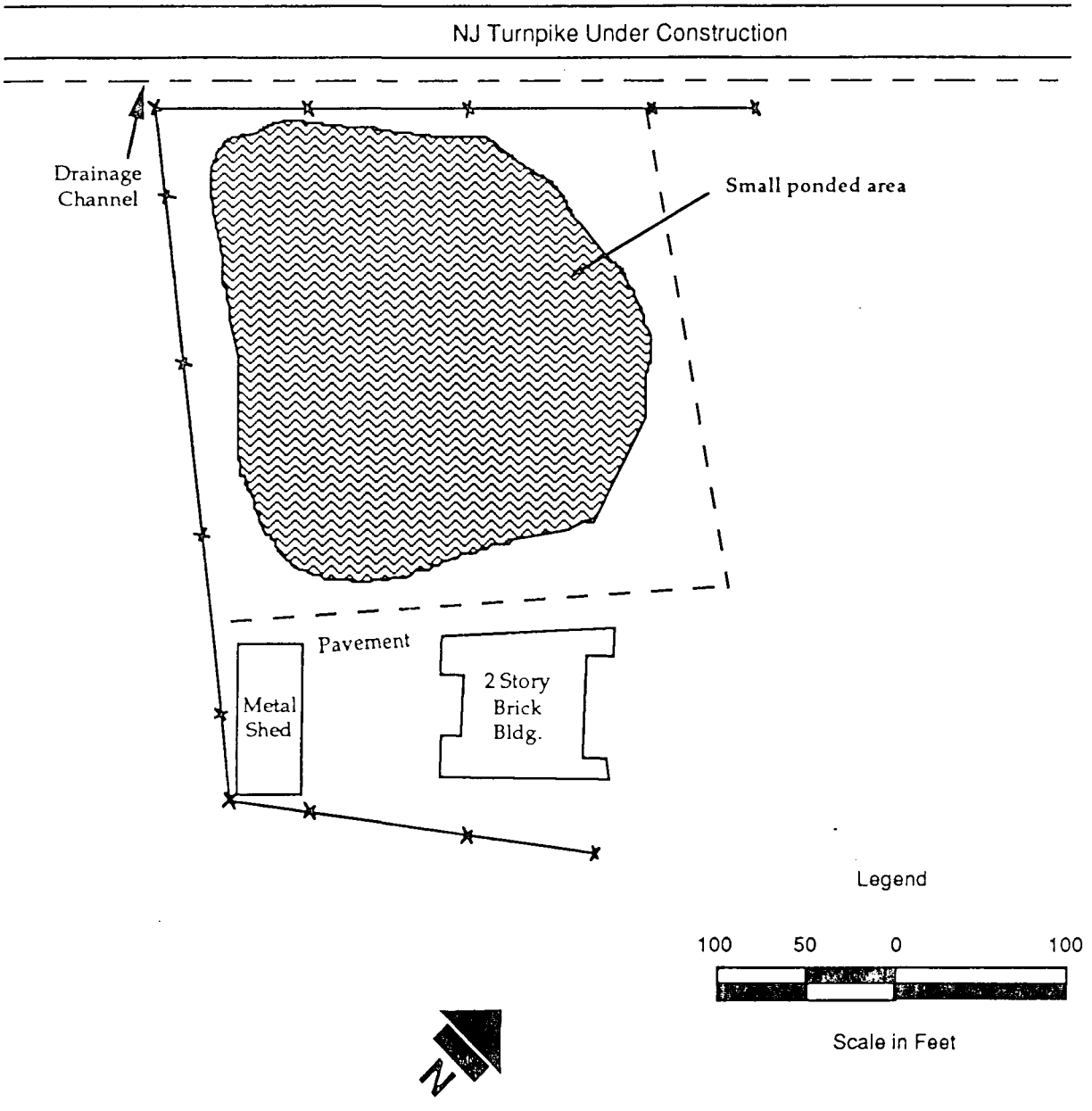
April 6, 1940
Aerial Photograph
Alliance Chemical
Newark, NJ
Area - A



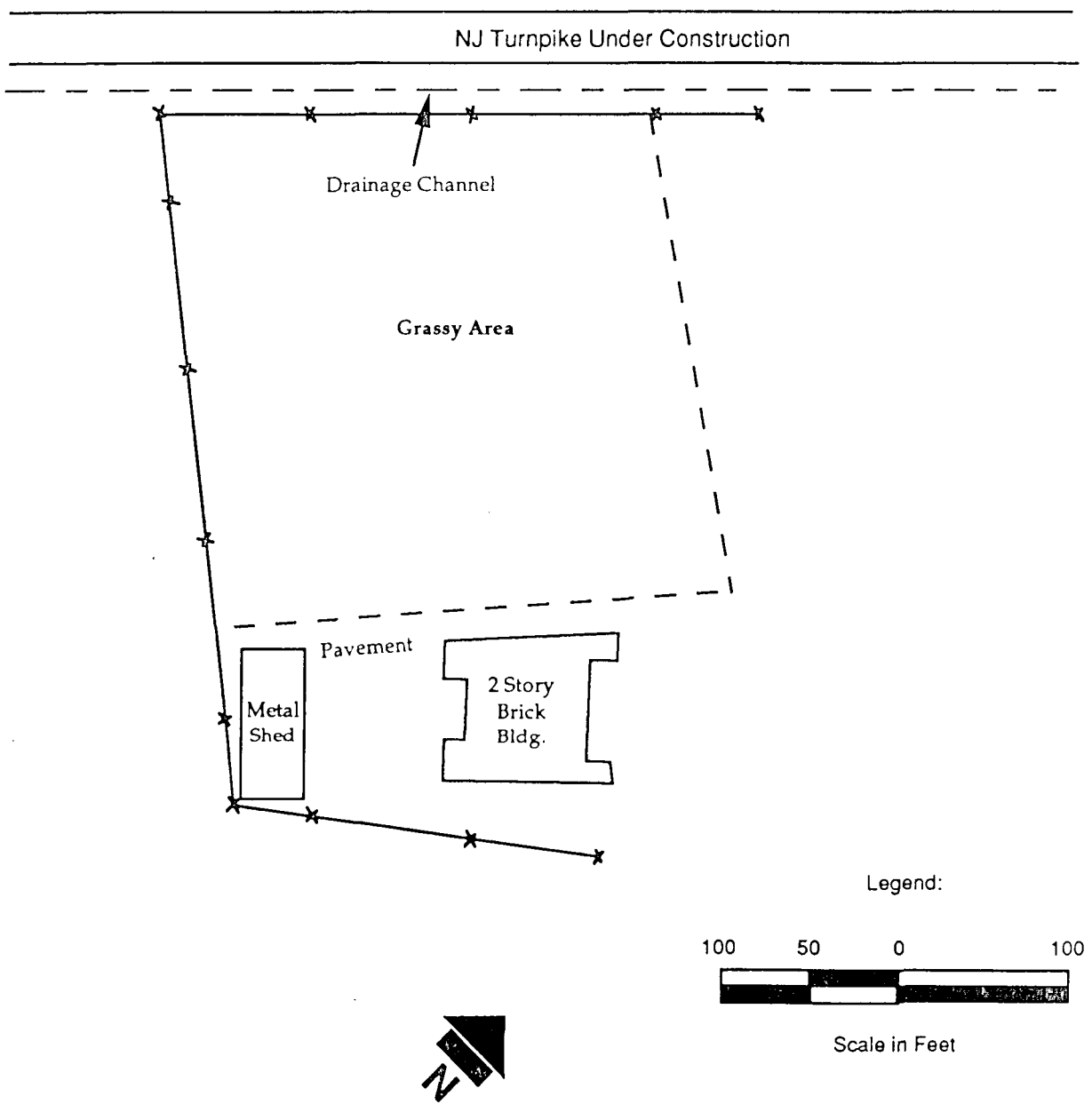
THE ERM GROUP

ALLIANCE CHEMICAL, INC/C9704.03.01

April 7, 1951
Aerial Photograph
Alliance Chemical
Newark, NJ
Area - A



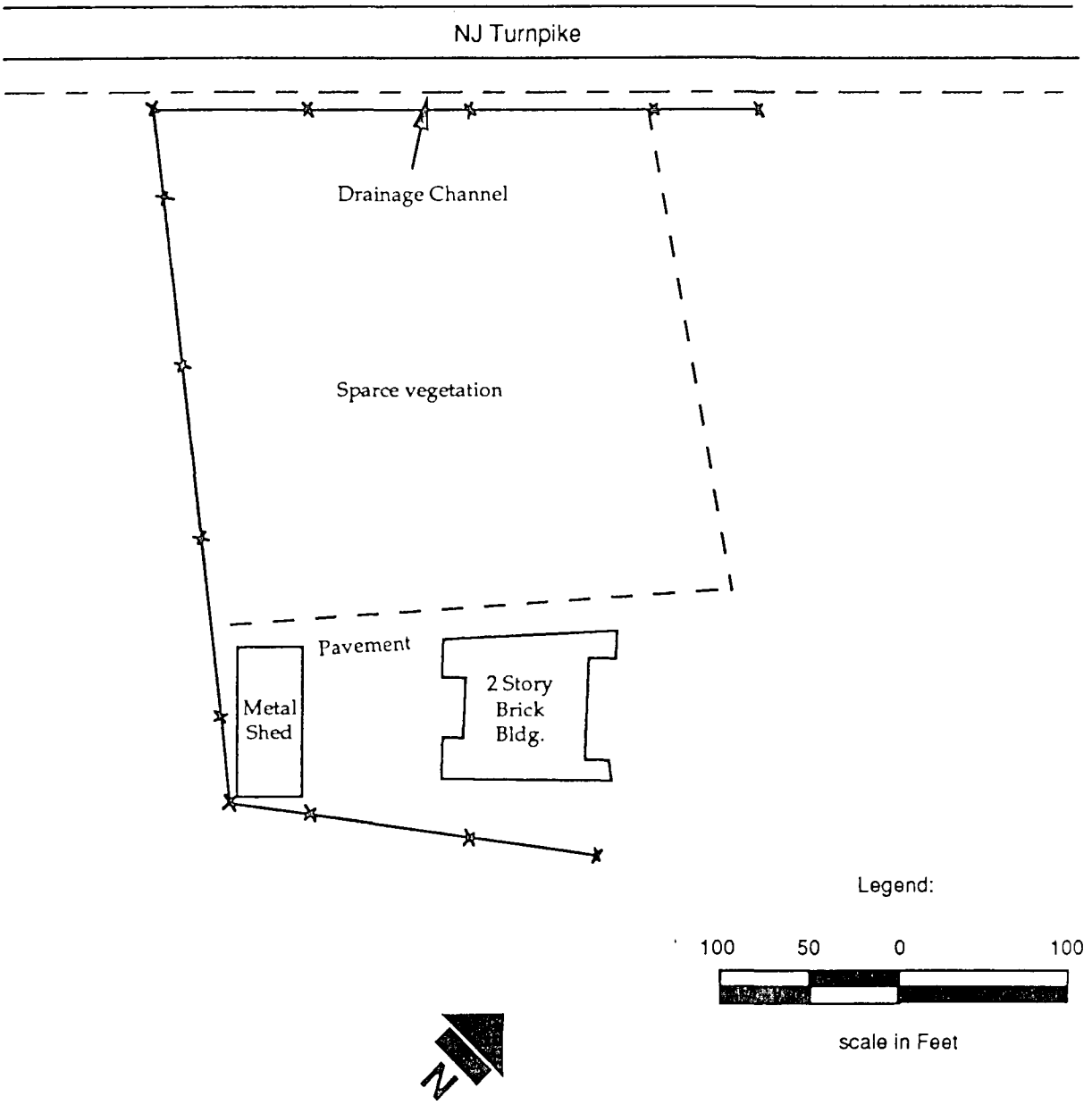
April 23, 1951
Aerial Photograph
Alliance Chemical
Newark, NJ
Area - A



THE ERM GROUP

ALLIANCE CHEMICAL, INC/C9704.03.01

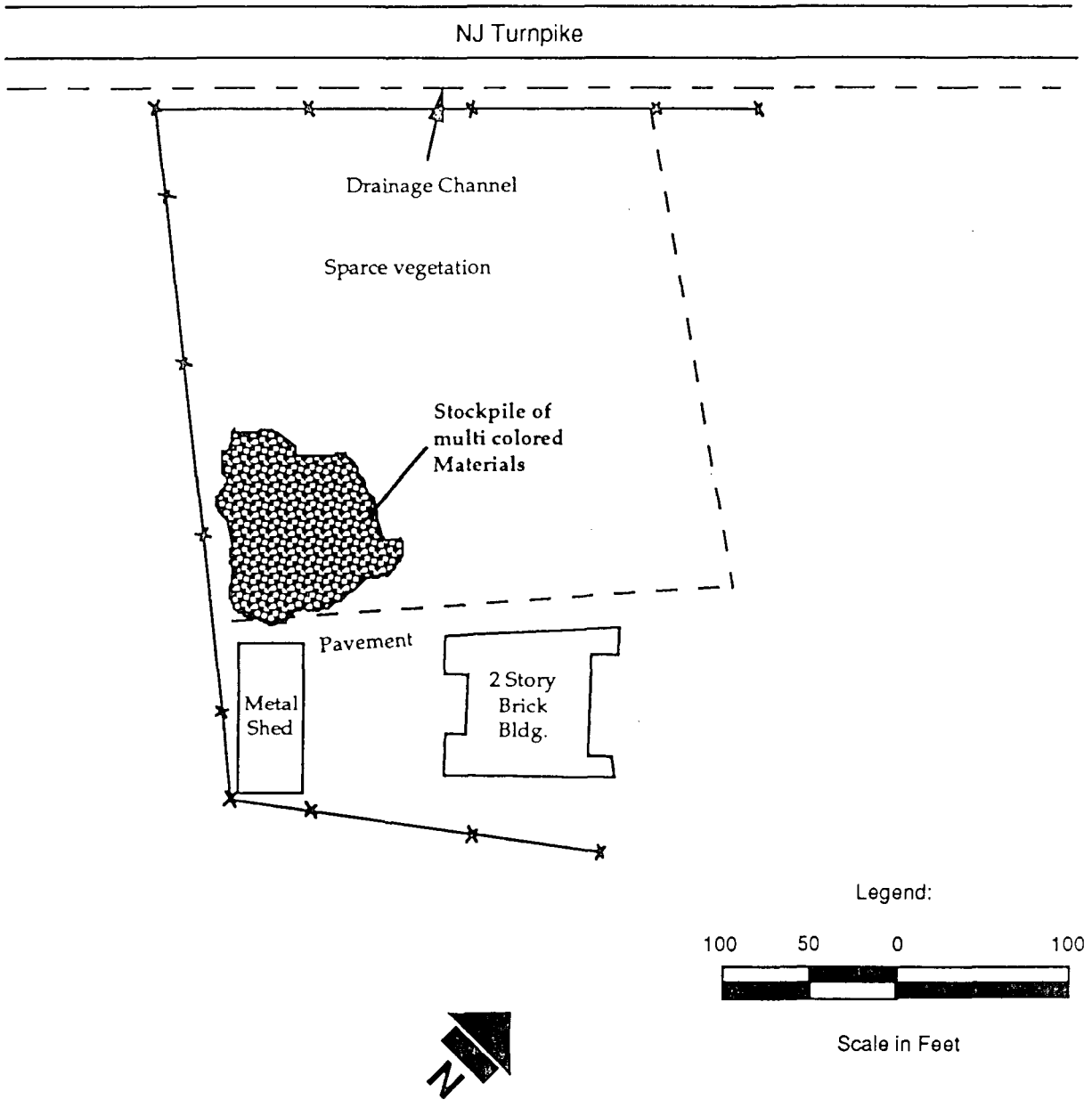
December 5, 1953
Aerial Photograph
Alliance Chemical
Newark, NJ
Area - A



THE ERM GROUP

ALLIANCE CHEMICAL, INC/C9704.03.01

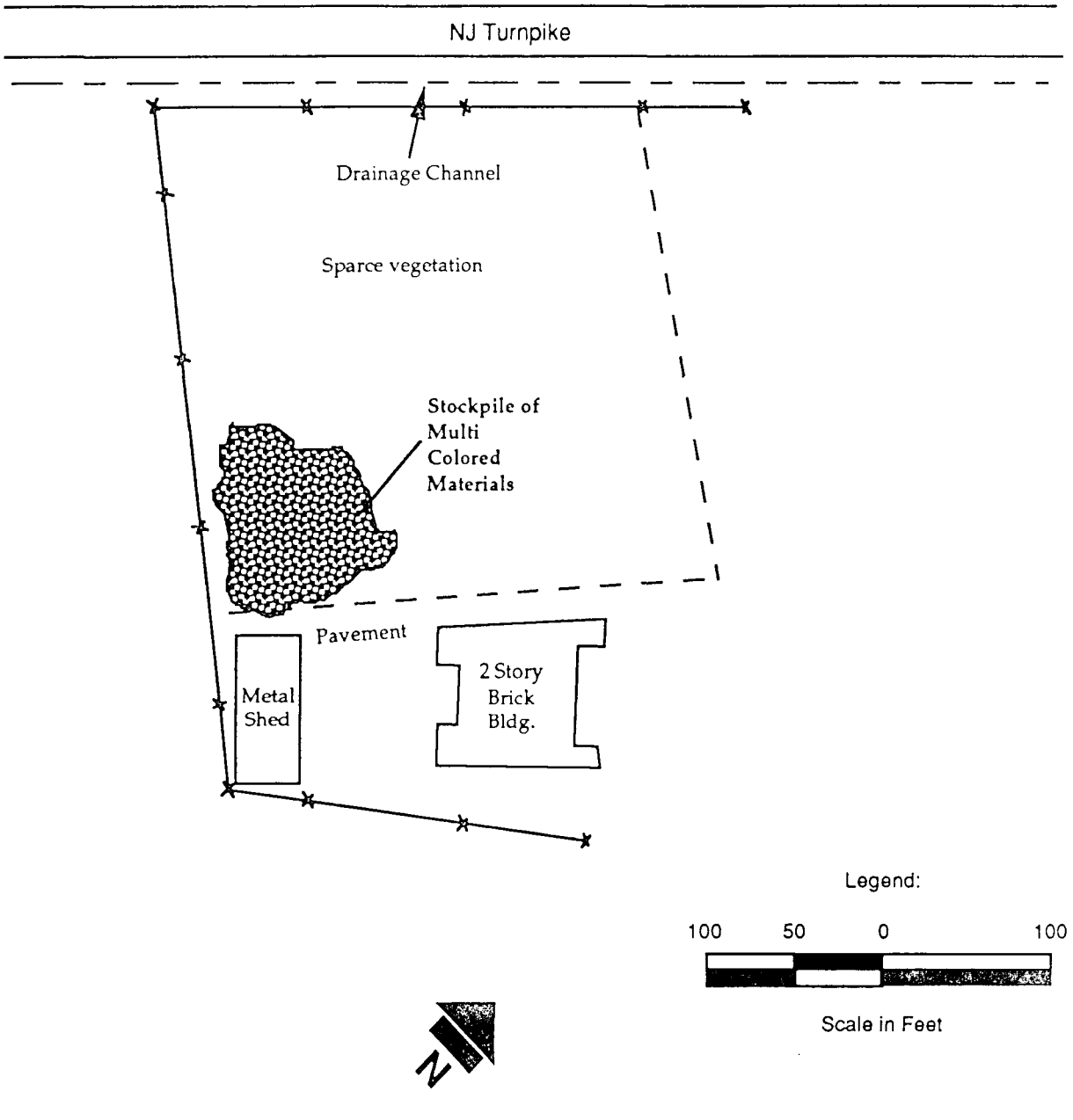
March 31, 1971
Aerial Photograph
Alliance Chemical
Newark, NJ
Area - A



THE ERM GROUP

ALLIANCE CHEMICAL, INC/C9704.03.01

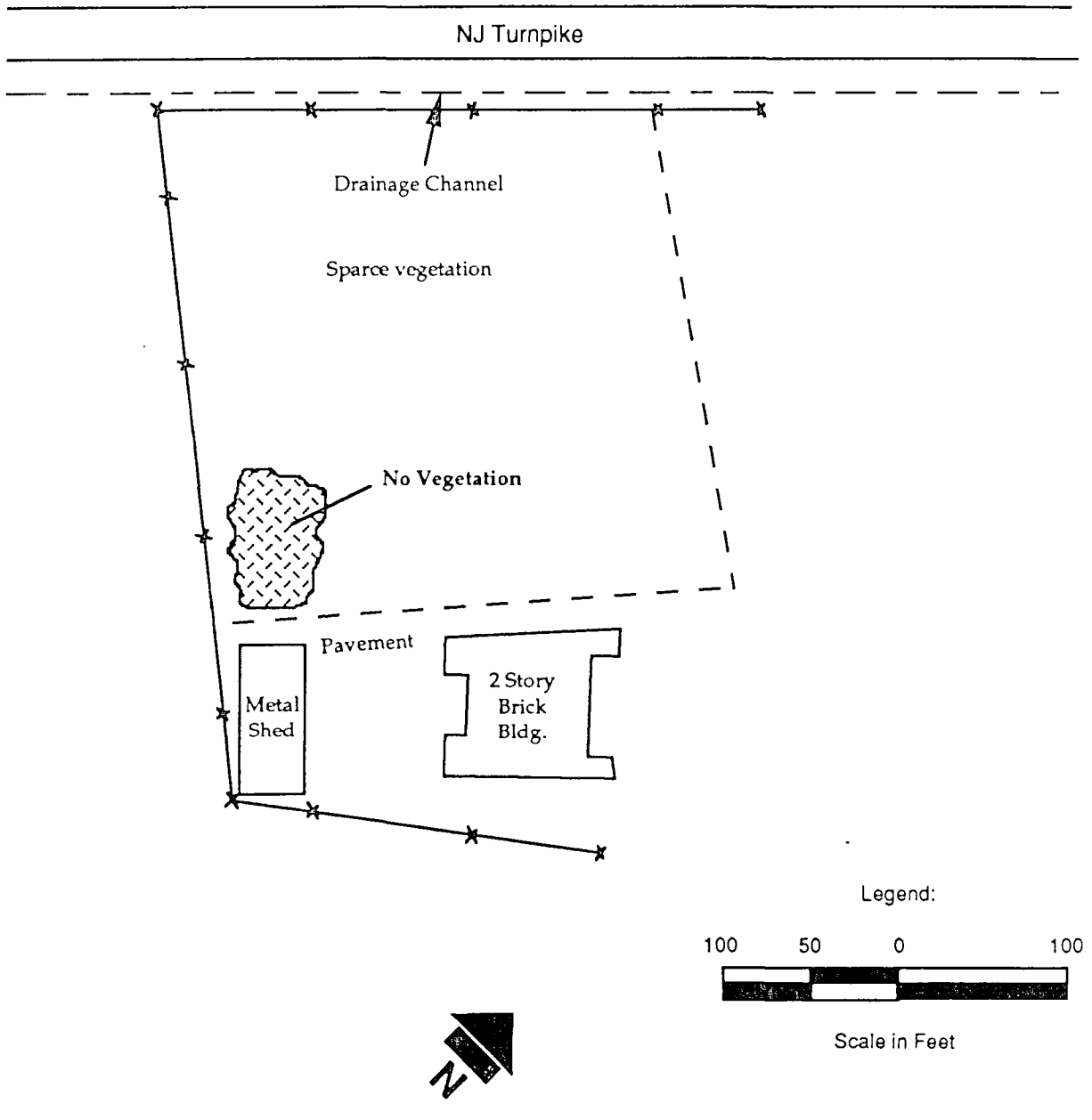
August 20, 1972
Aerial Photograph
Alliance Chemical
Newark, NJ
Area - A



THE ERM GROUP

ALLIANCE CHEMICAL, INC/C9704.03.01

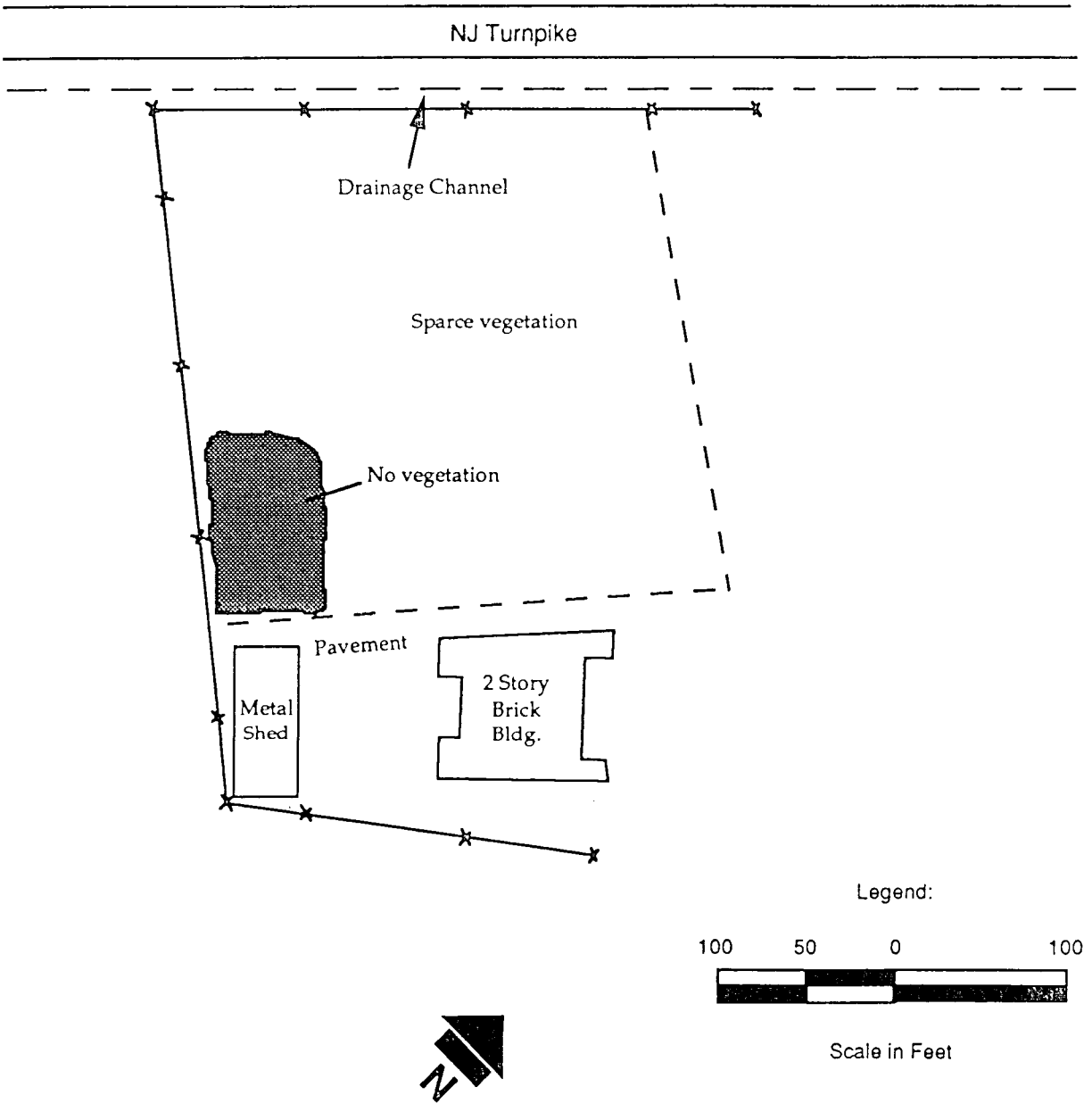
April 11, 1974
Aerial Photograph
Alliance Chemical
Newark, NJ
Area - A



THE ERM GROUP

ALLIANCE CHEMICAL, INC/C9704.03.01

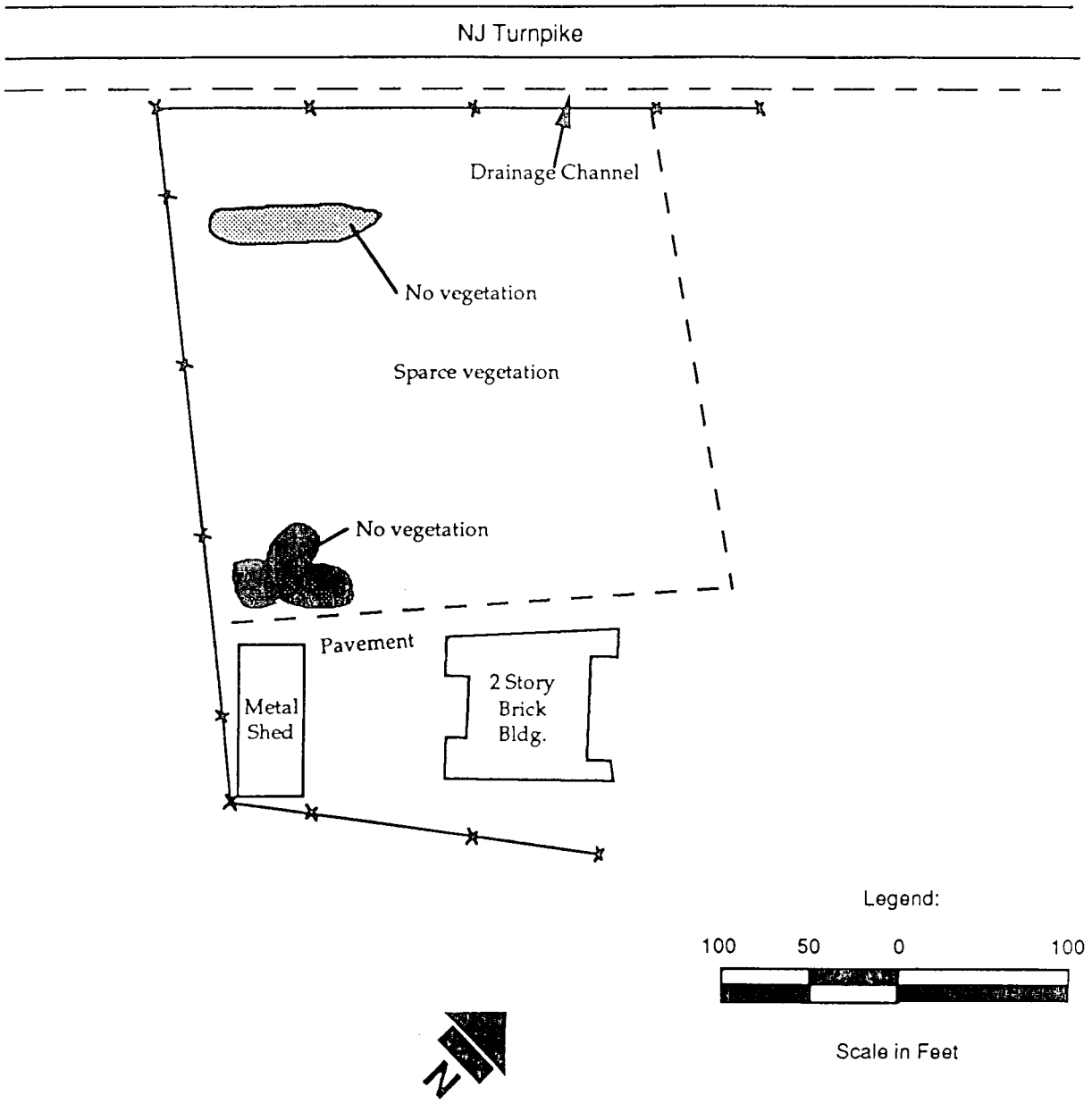
September 7, 1978
Aerial Photograph
Alliance Chemical
Newark, NJ
Area - A



THE ERM GROUP

ALLIANCE CHEMICAL, INC/C9704.03.01

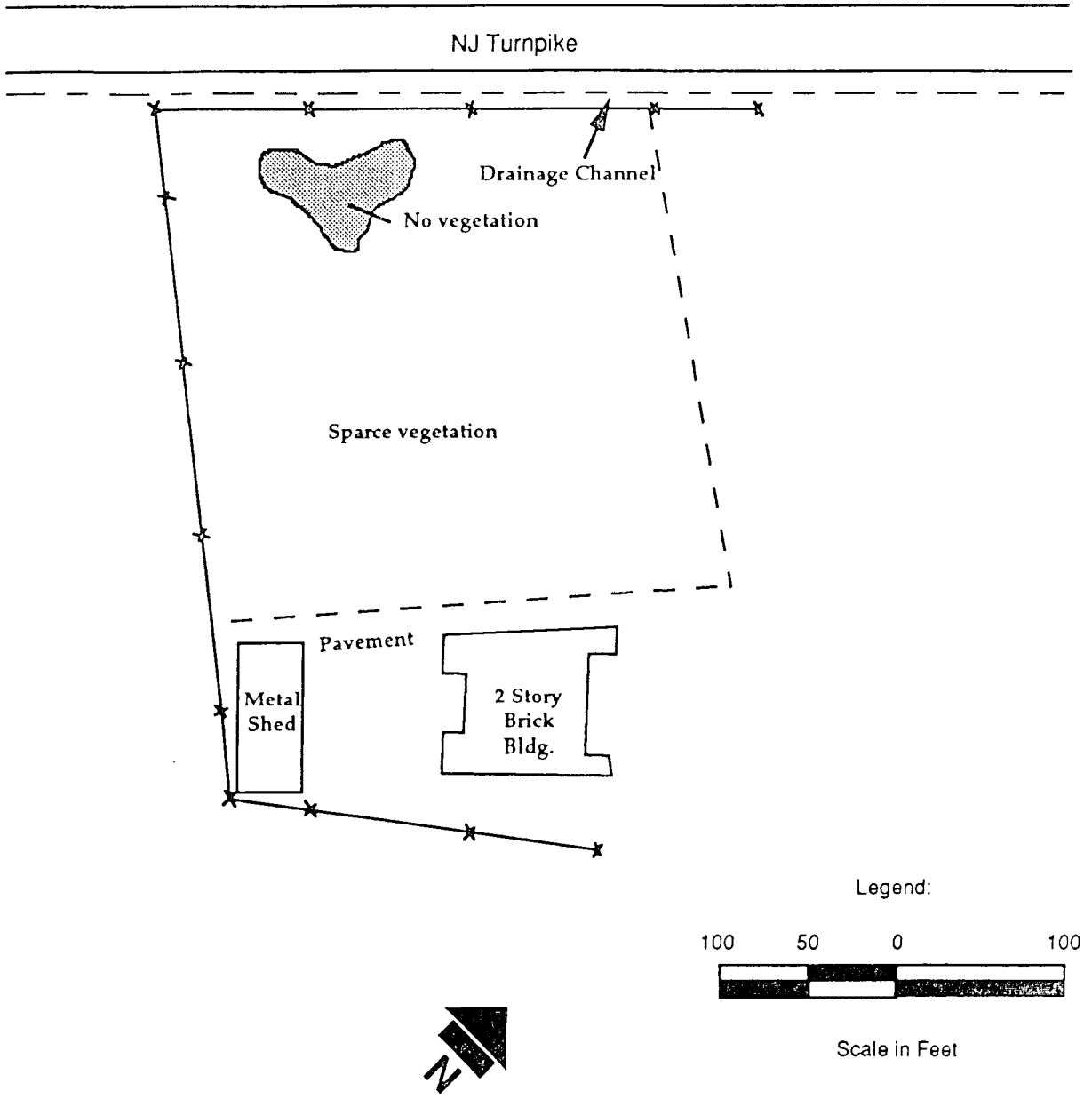
March 23, 1986
Aerial Photograph
Alliance Chemical
Newark, NJ
Area - A



THE ERM GROUP

ALLIANCE CHEMICAL, INC/C9704.03.01

March 11, 1991
Aerial Photograph
Alliance Chemical
Newark, NJ
Area - A



THE ERM GROUP

ALLIANCE CHEMICAL, INC/C9704.03.01

B

Attachment B
Well Search Table 0-1/4 Mile Radius

0-1/4 Mile Radius Well Search
Alliance Chemical: Site-A

Well Number	Location NJ Coordinates	Well Owner	Date Installed	Distance from Site	Diameter	Depth of Well	Interval Screened	Use	Average Pumping Rate	Well Permit Number	Well Status
1.	26.23.114	Star Enterprise	2/17/92	0.0 - 0.25 miles	2"	12'	2-12'	Monitoring	N/A	26-26352	Active
2.	26.23.115	Texaco Terminal	12/28/87	0.0 - 0.25 miles	6"	15'	5-15'	Recovery	N/A	26-12113	Active
3.	26.23.115	Texaco Terminal	4/1/88	0.0 - 0.25 miles	10"	10"	2.5-10'	Monitoring	N/A	26-12642	Active
4.	26.23.115	Texaco Terminal	4/1/88	0.0 - 0.25 miles	10"	10'	2-10'	Monitoring	N/A	26-12113	Active
5.	26.23.115	Texaco Terminal	4/1/88	0.0 - 0.25 miles	10"	10'	2-10'	Monitoring	N/A	26-12644	Active
6.	26.23.115	Texaco Terminal	4/1/88	0.0 - 0.25 miles	2"	10'	2-10'	Monitoring	N/A	26-12645	Active
7.	26.23.115	Texaco Terminal	8/1/88	0.0 - 0.25 miles	2"	10'	N/A	Monitoring	N/A	26-13990-1	Active
8.	26.23.115	Texaco Terminal	8/1/88	0.0 - 0.25 miles	2"	10'	N/A	Monitoring	N/A	26-13991-0	Active
9.	26.23.115	Texaco Terminal	8/1/88	0.0 - 0.25 miles	2"	10'	N/A	Monitoring	N/A	26-13992-8	Active
10.	26.23.115	Texaco Terminal	8/1/88	0.0 - 0.25 miles	4"	12'	2-12'	Monitoring	N/A	26-13993-6	Active
11.	26.23.115	Texaco Terminal	8/1/88	0.0 - 0.25 miles	4"	10.5'	0.5'-10.5'	Monitoring	N/A	26-13994-4	Active
12.	26.23.115	Texaco Terminal	8/1/88	0.0 - 0.25 miles	4"	12'	3-12'	Monitoring	N/A	26-13995-2	Active
13.	26.23.115	Texaco Terminal	8/1/88	0.0 - 0.25 miles	4"	12'	3-12'	Monitoring	N/A	26-13996-1	Active
14.	26.23.115	Texaco Terminal	8/1/88	0.0 - 0.25 miles	4"	12'	3-12'	Monitoring	N/A	26-13997-9	Active
15.	26.23.115	Celanese Chemical Company	10/1/88	0.0 - 0.25 miles	4"	8'	3-8'	N/A	N/A	26-14301-1	Active
16.	26.23.115	Celanese Chemical Company	10/1/88	0.0 - 0.25 miles	4"	8.5'	3.5-8.5'	N/A	N/A	26-14302-6	Active
17.	26.23.115	Celanese Chemical Company	10/1/88	0.0 - 0.25 miles	4"	14'	4-14'	N/A	N/A	26-14303	Active
18.	26.23.115	Celanese Chemical Company	10/1/88	0.0 - 0.25 miles	4"	8'	3-8'	N/A	N/A	26-14304-6	Active
19.	26.23.115	Celanese Chemical Company	10/1/88	0.0 - 0.25 miles	4"	8'	3-8'	N/A	N/A	26-14305-4	Active
20.	26.23.115	Celanese Chemical Company	10/1/88	0.0 - 0.25 miles	4"	8'	3-8'	N/A	N/A	26-14306	Active
21.	26.23.115	Celanese Chemical Company	10/1/88	0.0 - 0.25 miles	4"	8'	3-8'	N/A	N/A	26-14307-1	Active
22.	26.23.115	Celanese Chemical Company	10/1/88	0.0 - 0.25 miles	4"	10'	5-10'	N/A	N/A	26-14308-9	Active
23.	26.23.115	Celanese Chemical Company	10/1/88	0.0 - 0.25 miles	4"	13'	4-13'	N/A	N/A	26-14309-7	Active

0-1/4 Mile Radius Well Search
Alliance Chemical: Site-A

Well Number	Location NJ Coordinates	Well Owner	Date Installed	Distance from Site	Diameter	Depth of Well	Interval Screened	Use	Average Pumping Rate	Well Permit Number	Well Status
24.	26.23.115	Celanese Chemical Company	10/1/88	0.0 - 0.25 miles	4"	15'	5-15'	N/A	N/A	26-14310	Active
25.	26.23.115	Celanese Chemical Company	10/1/88	0.0 - 0.25 miles	4"	13'	3-13'	N/A	N/A	26-14311	Active
26.	26.23.115	Celanese Chemical Company	10/1/88	0.0 - 0.25 miles	4"	8'	3-8'	N/A	N/A	26-14312	Active
27.	26.23.115	Celanese Chemical Company	10/1/88	0.0 - 0.25 miles	4"	8'	3-8'	N/A	N/A	26-14313-1	Active
28.	26.23.115	Celanese Chemical Company	10/1/88	0.0 - 0.25 miles	4"	8'	3-8'	N/A	N/A	26-14316-0	Active
29.	26.23.115	Celanese Chemical Company	10/1/88	0.0 - 0.25 miles	4"	8'	3-8'	N/A	N/A	26-14317-8	Active
30.	26.23.115	Celanese Chemical Company	10/1/88	0.0 - 0.25 miles	4"	8'	3-8'	N/A	N/A	26-14319	Active
31.	26.23.115	Texaco Terminal	6/13/89	0.0 - 0.25 miles	4"	12.5'	2.5-12.5'	Monitoring	N/A	26-16361	Active
32.	26.23.115	Texaco Terminal	6/13/89	0.0 - 0.25 miles	4"	14'	4-14'	Monitoring	N/A	26-16362	Active
33.	26.23.115	Texaco Terminal	6/13/89	0.0 - 0.25 miles	4"	12'	2-12'	Monitoring	N/A	26-16363	Active
34.	26.23.115	Texaco Terminal	6/14/89	0.0 - 0.25 miles	4"	11.5'	1.5-11.5'	Monitoring	N/A	26-16364	Active
35.	26.23.115	Texaco Terminal	6/15/89	0.0 - 0.25 miles	4"	12'	2-12'	Monitoring	N/A	26-16365	Active
36.	26.23.115	Texaco Terminal	6/13/89	0.0 - 0.25 miles	8"	16.5'	6.5-16.5'	terceptor We	N/A	26-16366-7	Active
37.	26.23.115	Texaco Terminal	6/14/89	0.0 - 0.25 miles	8"	12'	2-12'	terceptor We	N/A	26-16367-5	Active
38.	26.23.115	Texaco Terminal	6/14/89	0.0 - 0.25 miles	8"	17'	2-17'	terceptor We	N/A	26-16368-3	Active
39.	26.23.115	Star Enterprise	12/13/89	0.0 - 0.25 miles	4"	11'	2-11'	Monitoring	N/A	26-18422	Active
40.	26.23.115	Star Enterprise	12/13/89	0.0 - 0.25 miles	4"	11'	2-11'	Monitoring	N/A	26-18423	Active
41.	26.23.115	Star Enterprise	12/13/89	0.0 - 0.25 miles	4"	11'	2-11'	Monitoring	N/A	26-18424	Active
42.	26.23.115	Star Enterprise	12/13/89	0.0 - 0.25 miles	4"	12.5'	2.5-12.5'	Monitoring	N/A	26-18425	Active
43.	26.23.115	Star Enterprise	1/2/90	0.0 - 0.25 miles	24"	12'	5-10.5'	Recovery	N/A	26-18426	Active
44.	26.23.115	Star Enterprise	8/29/90	0.0 - 0.25 miles	4"	12'	2-12'	Monitoring	N/A	26-21137	Active
45.	26.23.115	Star Enterprise	8/29/90	0.0 - 0.25 miles	4"	12'	2-12'	Monitoring	N/A	26-21138	Active
46.	26.23.115	Star Enterprise	8/29/90	0.0 - 0.25 miles	4"	12'	2-12'	Monitoring	N/A	26-21140	Active

0-1/4 Mile Radius Well Search
Alliance Chemical: Site-A

Well Number	Location NJ Coordinates	Well Owner	Date Installed	Distance from Site	Diameter	Depth of Well	Interval Screened	Use	Average Pumping Rate	Well Permit Number	Well Status
47.	26.23.115	Star Enterprise	8/29/90	0.0 - 0.25 miles	6"	15'	2-12'	Monitoring	N/A	26-21141	Active
48.	26.23.115	Star Enterprise	8/29/90	0.0 - 0.25 miles	6"	15'	2-12'	Monitoring	N/A	26-21142	Active
49.	26.23.115	Star Enterprise	8/29/90	0.0 - 0.25 miles	6"	12'	2-12'	Monitoring	N/A	26-21143	Active
50.	26.23.115	Star Enterprise	2/6/92	0.0 - 0.25 miles	4"	12'	2-12'	Monitoring	N/A	26-26703	Active
51.	26.23.115	Star Enterprise	2/17/92	0.0 - 0.25 miles	2"	12'	2-12'	Monitoring	N/A	26-26704	Active
52.	26.23.115	Star Enterprise	2/6/92	0.0 - 0.25 miles	4"	12'	2-12'	Monitoring	N/A	26-26705	Active
53.	26.23.115	Star Enterprise	2/6/92	0.0 - 0.25 miles	4"	12'	2-12'	Monitoring	N/A	26-28267	Active
54.	26.23.115	Star Enterprise	2/6/92	0.0 - 0.25 miles	4"	12'	2-12'	Monitoring	N/A	26-28269	Active
55.	26.23.115	Star Enterprise	2/6/92	0.0 - 0.25 miles	4"	12'	2-12'	Monitoring	N/A	26-28270	Active
56.	26.23.115	Star Enterprise	2/7/92	0.0 - 0.25 miles	4"	12'	N/A	Monitoring	N/A	26-28271	Active
57.	26.23.117	NL Spencer Kellogg, Inc.	11/20/86	0.0 - 0.25 miles	4"	4.5'	1.5-4'	N/A	N/A	26-9839	Active
58.	26.23.117	NL Spencer Kellogg, Inc.	11/19/86	0.0 - 0.25 miles	4"	8'	2-8'	N/A	N/A	26-9840	Active
59.	26.23.117	NL Spencer Kellogg, Inc.	11/17/86	0.0 - 0.25 miles	4"	7.5'	2.5-7.5'	N/A	N/A	26-9841	Active
60.	26.23.117	NL Spencer Kellogg, Inc.	11/19/86	0.0 - 0.25 miles	4"	8'	2-8'	N/A	N/A	26-9842	Active
61.	26.23.117	NL Spencer Kellogg, Inc.	11/18/86	0.0 - 0.25 miles	4"	8'	2-8'	N/A	N/A	26-9843	Active
62.	26.23.117	NL Spencer Kellogg, Inc.	11/18/86	0.0 - 0.25 miles	4"	7'	2-7'	N/A	N/A	26-9844	Active
63.	26.23.117	NL Spencer Kellogg, Inc.	11/18/86	0.0 - 0.25 miles	4"	11'	1.5-11'	N/A	N/A	26-9845	Active
64.	26.23.117	NL Spencer Kellogg, Inc.	11/20/86	0.0 - 0.25 miles	4"	11'	2-11'	N/A	N/A	26-9846	Active
65.	26.23.117	NL Spencer Kellogg, Inc.	11/13/86	0.0 - 0.25 miles	4"	10'	2-10'	N/A	N/A	26-9847	Active
66.	26.23.117	NL Spencer Kellogg, Inc.	11/18/86	0.0 - 0.25 miles	4"	6.5'	1.5-6.5'	N/A	N/A	26-9848	Active
67.	26.23.117	Sun Chemical Corporation	8/24/89	0.0 - 0.25 miles	4"	11.2'	1.2-11.2'	Monitoring	N/A	26-17301	Active
68.	26.23.117	Sun Chemical Corporation	8/24/89	0.0 - 0.25 miles	4"	11'	1-11'	Monitoring	N/A	26-17302	Active
69.	26.23.117	Sun Chemical Corporation	8/28/89	0.0 - 0.25 miles	4"	10.8'	1.8-10.8'	Monitoring	N/A	26-17303	Active

0-1/4 Mile Radius Well Search
Alliance Chemical: Site-A

Well Number	Location NJ Coordinates	Well Owner	Date Installed	Distance from Site	Diameter	Depth of Well	Interval Screened	Use	Average Pumping Rate	Well Permit Number	Well Status
70.	26.23.117	Englehard Corporation	11/10/89	0.0 - 0.25 miles	4"	27'	17-27'	Monitoring	N/A	26-18253	Active
71.	26.23.117	Englehard Corporation	11/14/89	0.0 - 0.25 miles	4"	29'	19-29'	Monitoring	N/A	26-18255	Active
72.	26.23.117	Sun Chemical Corporation	6/27/90	0.0 - 0.25 miles	4"	12.2'	2.2-12.2'	Monitoring	N/A	26-19157	Active
73.	26.23.117	Sun Chemical Corporation	6/27/90	0.0 - 0.25 miles	4"	12.8'	2.8-12.8'	Monitoring	1 gpm	26-19158	Active
74.	26.23.117	Sun Chemical Corporation	6/26/90	0.0 - 0.25 miles	4"	10.9'	0.9-10.9'	Monitoring	1 gpm	26-19159	Active
75.	26.23.117	Sun Chemical Corporation	8/9/90	0.0 - 0.25 miles	4"	10.5'	0.5-10.5'	Monitoring	N/A	26-20736-2	Active
76.	26.23.117	Sun Chemical Corporation	6/24/90	0.0 - 0.25 miles	4"	12'	2-12'	Monitoring	N/A	26-20737-1	Active
77.	26.23.118	Texaco Terminal	3/1/88	0.0 - 0.25 miles	2"	10'	N/A	Monitoring	N/A	26-10683-3	Active
78.	26.23.118	Texaco Terminal	3/1/88	0.0 - 0.25 miles	2"	10'	N/A	Monitoring	N/A	26-10684-1	Active
79.	26.23.118	Texaco Terminal	3/1/88	0.0 - 0.25 miles	2"	10'	N/A	Monitoring	N/A	26-10685-0	Active
80.	26.23.118	Texaco Terminal	3/1/88	0.0 - 0.25 miles	2"	10'	N/A	Monitoring	N/A	26-10686-8	Active
81.	26.23.118	Texaco Terminal	3/1/88	0.0 - 0.25 miles	2"	10'	N/A	Monitoring	N/A	26-10687-6	Active
82.	26.23.118	Texaco Terminal	3/1/88	0.0 - 0.25 miles	2"	10'	N/A	Monitoring	N/A	26-10688-4	Active
83.	26.23.118	Texaco Terminal	3/1/88	0.0 - 0.25 miles	4"	15'	N/A	Monitoring	N/A	26-10689-2	Active
84.	26.23.118	Texaco Terminal	3/1/88	0.0 - 0.25 miles	4"	15'	N/A	Monitoring	N/A	26-10690-6	Active
85.	26.23.118	Texaco Terminal	3/1/88	0.0 - 0.25 miles	4"	15'	N/A	Monitoring	N/A	26-10691-4	Active
86.	26.23.118	Texaco Terminal	3/1/88	0.0 - 0.25 miles	4"	15'	N/A	Monitoring	N/A	26-10692-2	Active
87.	26.23.118	Texaco Terminal	3/1/88	0.0 - 0.25 miles	4"	15"	N/A	Monitoring	N/A	26-10693-1	Active
88.	26.23.118	Texaco Terminal	12/28/87	0.0 - 0.25 miles	6"	15'	5-15'	Recovery	N/A	26-12112	Active
89.	26.23.118	Texaco Terminal	12/28/87	0.0 - 0.25 miles	6"	15'	5-15'	Recovery	N/A	26-12121	Active
90.	26.23.118	Henry Borda	6/1/89	0.0 - 0.25 miles	4"	12'	2-12'	Monitoring	2 gpm	26-16038	Active
91.	26.23.118	Henry Borda	6/1/89	0.0 - 0.25 miles	4"	12'	2-12'	Monitoring	0.07 gpm	26-16039	Active
92.	26.23.118	Henry Borda	6/19/89	0.0 - 0.25 miles	4"	11.5'	1.5-11.5'	Monitoring	2 gpm	26-16040	Active

0-1/4 Mile Radius Well Search
Alliance Chemical: Site-A

Well Number	Location NJ Coordinates	Well Owner	Date Installed	Distance from Site	Diameter	Depth of Well	Interval Screened	Use	Average Pumping Rate	Well Permit Number	Well Status
93.	26.23.118	Henry Borda	5/31/89	0.0 - 0.25 miles	2"	6'	1-6'	Monitoring	N/A	26-16490-6	Active
94.	26.23.118	Henry Borda	5/31/89	0.0 - 0.25 miles	2"	5.5'	0.5-5.5'	Monitoring	N/A	26-16491-4	Active
95.	26.23.118	Essex Industrial Chemical	11/19/89	0.0 - 0.25 miles	2"	10'	2-10'	Monitoring	2.5 gpm	26-17846	Active
96.	26.23.118	Essex Industrial Chemical	11/19/89	0.0 - 0.25 miles	2"	10'	4-10'	Monitoring	0.1 gpm	26-17847	Active
97.	26.23.118	Essex Industrial Chemical	11/19/89	0.0 - 0.25 miles	2"	10'	5-10'	Monitoring	3 gpm	26-17848	Active
98.	26.23.118	Essex Industrial Chemical	11/19/89	0.0 - 0.25 miles	2"	10'	5-10'	Monitoring	0.5 gpm	26-17849	Active
99.	26.23.118	Essex Industrial Chemical	11/19/89	0.0 - 0.25 miles	2"	15'	5-15'	Monitoring	1 gpm	26-17850	Active
100.	26.23.118	Essex Industrial Chemical	11/19/89	0.0 - 0.25 miles	2"	25'	15-25'	Monitoring	0.5 gpm	26-17851	Active
101.	26.23.118	Essex Industrial Chemical	11/19/89	0.0 - 0.25 miles	2"	15'	5-15'	Monitoring	0.3 gpm	26-17852	Active
102.	26.23.141	Englehard Corporation	11/9/89	0.0 - 0.25 miles	4"	30'	20-30'	Monitoring	N/A	26-18256	Active
103.	26.23.141	Englehard Corporation	11/7/89	0.0 - 0.25 miles	4"	10'	3-10'	Monitoring	N/A	26-18257	Active
104.	26.23.141	Englehard Corporation	11/15/89	0.0 - 0.25 miles	4"	26'	16-26'	Monitoring	N/A	26-18258	Active
105.	26.23.141	Englehard Corporation	11/6/89	0.0 - 0.25 miles	4"	13'	3-13'	Monitoring	N/A	26-18259	Active
106.	26.23.141	Englehard Corporation	11/13/89	0.0 - 0.25 miles	4"	28'	18-28'	Monitoring	N/A	26-18260	Active
107.	26.23.141	Englehard Corporation	11/10/89	0.0 - 0.25 miles	4"	28'	18-28'	Monitoring	N/A	26-18261	Active
108.	26.23.141	Englehard Corporation	11/15/89	0.0 - 0.25 miles	4"	31'	21-31'	Monitoring	N/A	26-18262	Active
109.	26.23.142	Sun Refining & Marketing	11/27/90	0.0 - 0.25 miles	4"	10'	0.5-9.5'	Monitoring	1 gpm	26-22962	Active
110.	26.23.142	Sun Refining & Marketing	11/27/90	0.0 - 0.25 miles	4"	10'	0.5-9.5'	Monitoring	1 gpm	26-22963	Active
111.	26.23.142	Di Giorgio Corporation	11/8/91	0.0 - 0.25 miles	4"	20'	5-20'	Monitoring	1 gpm	26-27403	Active
112.	26.23.142	Di Giorgio Corporation	11/8/91	0.0 - 0.25 miles	4"	20'	5-20'	Monitoring	0.5 gpm	26-27404	Active
113.	26.23.142	Di Giorgio Corporation	11/8/91	0.0 - 0.25 miles	4"	20'	5-20'	Monitoring	0.5 gpm	26-27405	Active

C

Attachment C
Vista National Radius Profiles

VISTA
NATIONAL RADIUS PROFILE

VISTA Report #: 5/032862-001 Date of Report: 12/30/93

Ref/Loan #: SITE Q
Client: JOHN TORRANCE, ERM - EWING OFFICE
300 PHILLIPS BLVD STE 200, EWING, NJ 08618
Subject
Property: 309-327 AVENUE P
NEWARK, NJ 07105

SUMMARY OF FEDERAL RECORDS FOUND

Database & Date	Agency and Type of Records	0 to 1/8 mi	1/8 to 1/4 mi	1/4 to 1/2 mi	1/2 to 1 mi	TOTAL
NPL 06/93	US EPA Superfund Sites	0	0	0	0	0
CERCLIS 09/93	US EPA Potential Superfund Sites	3	5	8	--	16
RCRA-LgGen 07/93	US EPA RCRA Large Quantity Generators	0	5	--	--	5
RCRA-SmGen 07/93	US EPA RCRA Small and Very Small Quantity Generators	1	2	--	--	3
RCRA-TSD 07/93	US EPA RCRA Treatment,Storage,and/or Disposal Sites	0	0	1	2	3
RCRA-Transp 07/93	US EPA RCRA Transporters	0	2	--	--	2
ERNS 09/93	US EPA	1	--	--	--	1
	FEDERAL RECORDS Sub-total:	5	14	9	2	30

Note: 1) A dash (--) indicates the list is not searched at that distance.
2) Sites often have a record in more than one database.

 For more information call: (619) 450-6100

VISTA
NATIONAL RADIUS PROFILE

VISTA Report #: 5/032862-001 Date of Report: 12/30/93

Ref/Loan #: SITE Q
Client: JOHN TORRANCE, ERM - EWING OFFICE
300 PHILLIPS BLVD STE 200, EWING, NJ 08618
Subject
Property: 309-327 AVENUE P
NEWARK, NJ 07105

SUMMARY OF STATE RECORDS FOUND

Database & Date	Agency and Type of Records	0 to 1/8 mi	1/8 to 1/4 mi	1/4 to 1/2 mi	1/2 to 1 mi	TOTAL
SPL 10/92	Department of Environmental Protection, Bureau of Revenue Site Remediation Program Site Status Report	0	2	1	8	11
LUST 02/92	Department of Environmental Protection, Division of Water Resource LUST Incident List	0	0	2	--	2
SWLF 04/93	Department of Environmental Protection, Division of Solid Waste Solid Waste Facility Directory	0	0	0	--	0
UST's 04/92	Department of Environmental Protection, Division of Water Resource Underground Storage Tank Database	0	3	--	--	3
	STATE RECORDS Sub-total:	0	5	3	8	16
	TOTAL:	5	19	12	10	46

Note: 1) A dash (--) indicates the list is not searched at that distance.
2) Sites often have a record in more than one database.

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VISTA NATIONAL RADIUS PROFILE

12/30/93

VISTA Report #: 5/032862-001

CERCLIS

MAP REF #	EPA ID / AGENCY ID	SITE NAME AND ADDRESS			
		WITHIN 1/8 MILE			
10		NEWARK HOUSING AUTH PROPERTY 291-549 AVE P		NEWARK 07105	Distance: .10 mi. Direction: NE Vista ID: 293754
	NJD980529424	Status	: NOT PROP/CURR/DELE NPL		
		Site Ownership	: OTHER		
		Lead Agency	: NO DETERMINATION		
		Site Events	:		
		Event Type	: SCREENING SITE INSPECTION		
		Lead Agency	: FUND LEAD		
		Event Type	: REMOVAL ACTION		
		Lead Agency	: FUND LEAD		
		Event Type	: PRELIMINARY ASSESSMENT		
		Lead Agency	: FUND LEAD		
		Event Type	: DISCOVERY		
		Lead Agency	: FUND LEAD		
14		D & J TRUCKING 310-328 AVE P		NEWARK 07105	Distance: .12 mi. Direction: SE Vista ID: 123662
	NJD980528962	Status	: NOT PROP/CURR/DELE NPL		
		Site Ownership	: OTHER		
		Lead Agency	: NO DETERMINATION		
		Site Events	:		
		Event Type	: SCREENING SITE INSPECTION		
		Lead Agency	: FUND LEAD		
		Event Type	: PRELIMINARY ASSESSMENT		
		Lead Agency	: FUND LEAD		
		Event Type	: DISCOVERY		
		Lead Agency	: FUND LEAD		
15		ALLIANCE COLOR & CHEMICAL CO 309-327 AVENUE P		NEWARK 07105	Distance: .01 mi. Direction: -- Vista ID: 12738
	NJD980529614	Status	: NOT PROP/CURR/DELE NPL		
		Site Ownership	: OTHER		
		Lead Agency	: NO DETERMINATION		
		Site Events	:		
		Event Type	: SCREENING SITE INSPECTION		
		Event Type	: PRELIMINARY ASSESSMENT		

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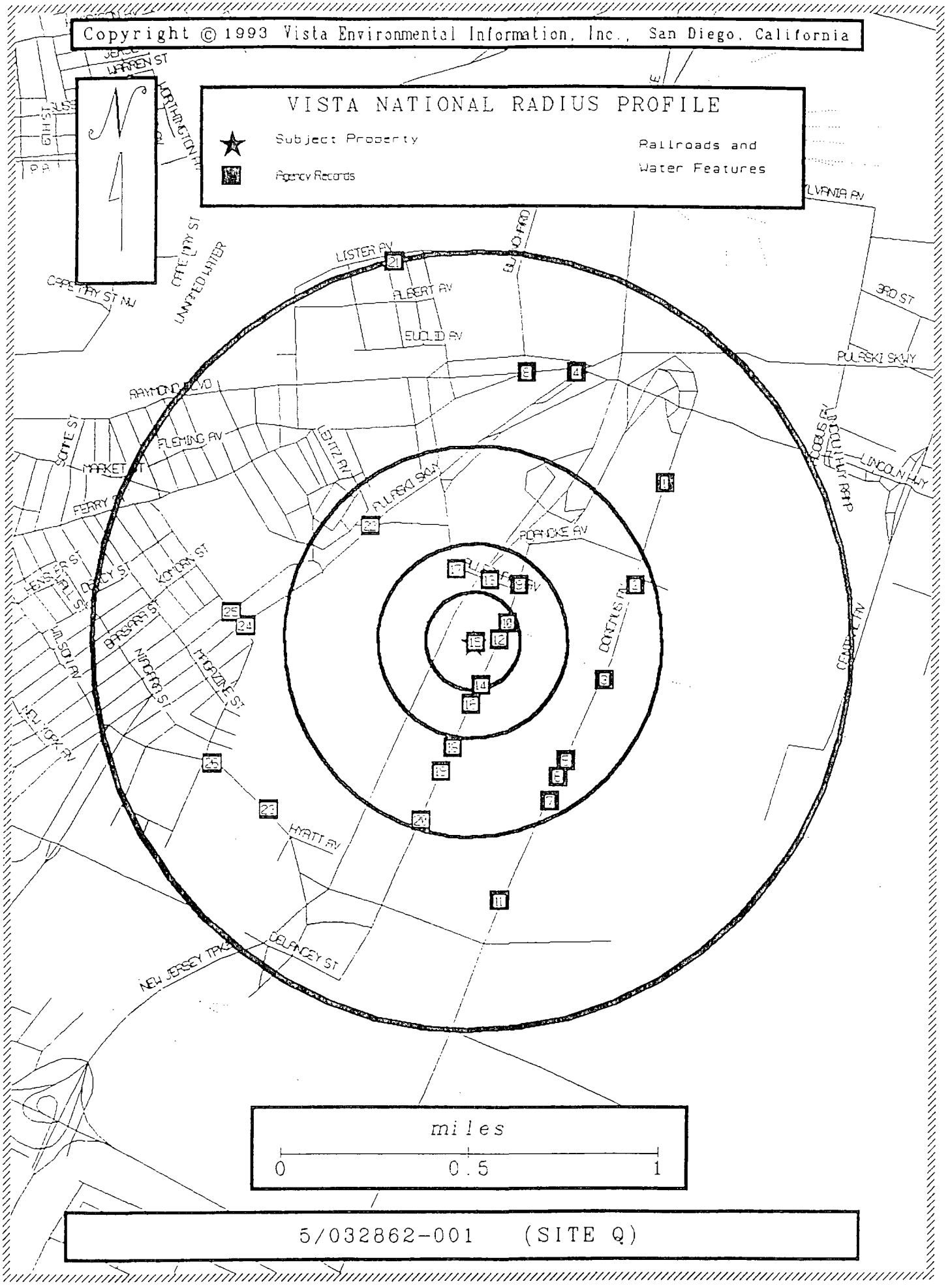

5/032862-001 (SITE Q)

943390066

CERCLIS

MAP REF #	EPA ID / AGENCY ID	SITE NAME AND ADDRESS		
WITHIN 1/8 MILE				
15		ALLIANCE COLOR & CHEMICAL CO 309-327 AVENUE P	NEWARK 07105	Distance: .01 mi. Direction: -- Vista ID: 12738
		Event Type : DISCOVERY Lead Agency : FUND LEAD		
WITHIN 1/8 TO 1/4 MILE				
13		ASHLAND CHEMICAL CO 221 FOUNDRY AVE	NEWARK 07101	Distance: .16 mi. Direction: NE Vista ID: 28955
	NJD060803905	Status : NOT PROP/CURR/DELE NPL Site Ownership : OTHER Lead Agency : NO DETERMINATION Site Events : Event Type : PRELIMINARY ASSESSMENT Lead Agency : FUND LEAD Event Type : DISCOVERY		
16		AVENUE P SITE AVENUE P	NEWARK 07105	Distance: .16 mi. Direction: S Vista ID: 34529
	NJD980504831	Status : NOT PROP/CURR/DELE NPL Site Ownership : OTHER Lead Agency : NO DETERMINATION Site Events : Event Type : SCREENING SITE INSPECTION Event Type : PRELIMINARY ASSESSMENT Event Type : PRELIMINARY ASSESSMENT Lead Agency : FUND LEAD Event Type : DISCOVERY Lead Agency : FUND LEAD		

CERCLIS

MAP REF #	EPA ID / AGENCY ID	SITE NAME AND ADDRESS			
		WITHIN 1/8 TO 1/4 MILE			
17		ARKANSAS COMPANY 185 FOUNDRY STREET		NEWARK 07105	Distance: .19 mi. Direction: NW Vista ID: 25310
	NJD002155703	Status	: NOT PROP/CURR/DELE NPL		
		Site Ownership	: UNKNOWN		
		Lead Agency	: NO DETERMINATION		
		Site Events	:		
		Event Type	: REMOVAL ACTION		
		Lead Agency	: FUND LEAD		
17		GIGNARD CHEMICAL COMPANY INC. 185 FOUNDRY ST.		NEWARK 07105	Distance: .19 mi. Direction: NW Vista ID: 101140
	NJD002201093	Status	: NOT PROP/CURR/DELE NPL		
		Site Ownership	: UNKNOWN		
		Lead Agency	: NO DETERMINATION		
		Site Events	:		
		Event Type	: PRELIMINARY ASSESSMENT		
		Lead Agency	: FUND LEAD		
		Event Type	: DISCOVERY		
		Lead Agency	: FUND LEAD		
		Status	: NOT PROP/CURR/DELE NPL		
		Site Ownership	: OTHER		
		Lead Agency	: NO DETERMINATION		
		Site Events	:		
		Event Type	: SCREENING SITE INSPECTION		
		Event Type	: PRELIMINARY ASSESSMENT		
		Event Type	: DISCOVERY		
17		SUN/DIC ACQUISITION CORP. 185 FOUNDRY ST.		NEWARK 07105	Distance: .19 mi. Direction: NW Vista ID: 405263
	NJD002458842	Status	: NOT PROP/CURR/DELE NPL		
		Site Ownership	: UNKNOWN		
		Lead Agency	: NO DETERMINATION		
		Site Events	:		
		Event Type	: PRELIMINARY ASSESSMENT		
		Lead Agency	: FUND LEAD		
		Event Type	: DISCOVERY		

CERCLIS

MAP REF #	EPA ID / AGENCY ID	SITE NAME AND ADDRESS		
		WITHIN 1/8 TO 1/4 MILE		
17		SUN/DIC ACQUISITION CORP. 185 FOUNDRY ST.	NEWARK 07105	Distance: .19 mi. Direction: NW Vista ID: 405263
		Lead Agency : FUND LEAD		
		WITHIN 1/4 TO 1/2 MILE		
2		PITT-CONSOL CHEMICAL COM* 191 DOREMUS AVENUE	NEWARK 07105	Distance: .45 mi. Direction: NE Vista ID: 331834
	NJD004948188	Status : NOT PROP/CURR/DELE NPL		
		Site Ownership : OTHER		
		Lead Agency : NO DETERMINATION		
		Site Events :		
		Event Type : SCREENING SITE INSPECTION		
		Lead Agency : FUND LEAD		
		Event Type : PRELIMINARY ASSESSMENT		
		Event Type : DISCOVERY		
		Lead Agency : FUND LEAD		
3		NATIONAL DISTILLERS & CHEMICAL CORP 300 DOREMUS AVE	NEWARK 07105	Distance: .36 mi. Direction: SE Vista ID: 3143081
	NJD002447860	Status : NOT PROP/CURR/DELE NPL		
		Site Ownership : OTHER		
		Lead Agency : NO DETERMINATION		
		Site Events :		
		Event Type : SCREENING SITE INSPECTION		
		Lead Agency : FUND LEAD		
		Event Type : PRELIMINARY ASSESSMENT		
		Event Type : DISCOVERY		
5		CELANESE NEWARK TERMINAL 354 AND 375 DOREMUS AVENUE	NEWARK 07105	Distance: .39 mi. Direction: SE Vista ID: 75012
	NJD980530299	Status : NOT PROP/CURR/DELE NPL		
		Site Ownership : OTHER		

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CERCLIS

MAP REF #	EPA ID / AGENCY ID	SITE NAME AND ADDRESS			
			WITHIN 1/4 TO 1/2 MILE		
5		CELANESE NEWARK TERMINAL 354 AND 375 DOREMUS AVENUE		NEWARK 07105	Distance: .39 mi. Direction: SE Vista ID: 75012
		Lead Agency	: NO DETERMINATION		
		Site Events	:		
		Event Type	: SCREENING SITE INSPECTION		
		Lead Agency	: FUND LEAD		
		Event Type	: PRELIMINARY ASSESSMENT		
		Event Type	: DISCOVERY		
		Lead Agency	: FUND LEAD		
		Status	: NOT PROP/CURR/DELE NPL		
		Site Ownership	: OTHER		
		Lead Agency	: NO DETERMINATION		
		Site Events	:		
		Event Type	: SCREENING SITE INSPECTION		
		Lead Agency	: FUND LEAD		
		Event Type	: PRELIMINARY ASSESSMENT		
		Lead Agency	: FUND LEAD		
		Event Type	: DISCOVERY		
6		NL SPENCER KELLOG, INC. 400 DOREMUS AVENUE		NEWARK 07105	Distance: .42 mi. Direction: SE Vista ID: 298088
	NJD092217892	Status	: NOT PROP/CURR/DELE NPL		
		Site Ownership	: UNKNOWN		
		Lead Agency	: NO DETERMINATION		
		Site Events	:		
		Event Type	: PRELIMINARY ASSESSMENT		
		Lead Agency	: FUND LEAD		
		Event Type	: DISCOVERY		
		Lead Agency	: FUND LEAD		
7		SUN REFINING AND MARKETING COMPANY 436 DOREMUS AVENUE		NEWARK 07105	Distance: .46 mi. Direction: SE Vista ID: 3396897
	NJD001722511	Status	: NOT PROP/CURR/DELE NPL		
		Site Ownership	: OTHER		
		Lead Agency	: NO DETERMINATION		
		Site Events	:		

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CERCLIS

MAP REF #	EPA ID / AGENCY ID	SITE NAME AND ADDRESS		
		WITHIN 1/4 TO 1/2 MILE		
7		SUN REFINING AND MARKETING COMPANY 436 DOREMUS AVENUE	NEWARK 07105	Distance: .46 mi. Direction: SE Vista ID: 3396897
		Event Type : PRELIMINARY ASSESSMENT Event Type : DISCOVERY		
19		B & C TOWING 461 AVENUE P	NEWARK 07105	Distance: .35 mi. Direction: SW Vista ID: 40973
	NJD980528764	Status : NOT PROP/CURR/DELE NPL Site Ownership : PRIVATE/NON-GOVERNMENTAL Lead Agency : NO DETERMINATION Site Events : Event Type : SCREENING SITE INSPECTION Lead Agency : FUND LEAD Event Type : REMOVAL ACTION Event Type : PRELIMINARY ASSESSMENT Event Type : DISCOVERY Lead Agency : FUND LEAD Description :EIGHTY FIFTY GALLON DRUMS OF PAINT SLUDGE ABANDONED IN GINDY TRAILER IN NEWARK. TRAILER WAS SUBSEQUENTLY TOWED TO B & C TOWING FACILITY BY NWK. POLICE		
20		FLEXCRAFT 527 AVE P	NEWARK 07105	Distance: .48 mi. Direction: SW Vista ID: 153931
	NJD002150928	Status : NOT PROP/CURR/DELE NPL Site Ownership : OTHER Lead Agency : NO DETERMINATION Site Events : Event Type : SCREENING SITE INSPECTION Lead Agency : FUND LEAD Event Type : PRELIMINARY ASSESSMENT Lead Agency : FUND LEAD Event Type : DISCOVERY Lead Agency : FUND LEAD		

CERCLIS

MAP REF #	EPA ID / AGENCY ID	SITE NAME AND ADDRESS			
		WITHIN 1/4 TO 1/2 MILE			
22		CONUS CHEMICAL		NEWARK	Distance: .40 mi.
		96 ROANOKE AVENUE		07105	Direction: NW
					Vista ID: 1274225
	NJD986578094	Status	: NOT PROP/CURR/DELE NPL		
		Site Ownership	: UNKNOWN		
		Lead Agency	: NO DETERMINATION		
		Site Events	:		
		Event Type	: REMOVAL ACTION		
		Event Type	: REMOVAL ACTION		
		Lead Agency	: FUND LEAD		
		Description	:ABANDONED CHEMICAL REPACKAGING AND DISTRIBUTION FACILITY		

RCRA-LgGen

MAP REF #	EPA ID / AGENCY ID	SITE NAME AND ADDRESS		
		WITHIN 1/8 TO 1/4 MILE		
13		ASHLAND CHEM CO 221 FOUNDRY ST	NEWARK 07105	Distance: .16 mi. Direction: NE Vista ID: 28955
	NJD060803905	Generator Class	:Generators who generate at least 1000 kg./month of non-acutely hazardous waste (or 1 kg./month of acutely hazardous waste).	
17		CORONET CHEMICAL CO INC 185 FOUNDRY STREET	NEWARK 07105	Distance: .19 mi. Direction: NW Vista ID: 101140
	NJD002201093	Generator Class	:Generators who generate at least 1000 kg./month of non-acutely hazardous waste (or 1 kg./month of acutely hazardous waste).	
17		R F E INDUSTRIES INC 185 FOUNDRY STREET	NEWARK 07105	Distance: .19 mi. Direction: NW Vista ID: 110339
	NJD981131006	Generator Class	:Generators who generate at least 1000 kg./month of non-acutely hazardous waste (or 1 kg./month of acutely hazardous waste).	
		Generator Class	:Generators who generate at least 1000 kg./month of non-acutely hazardous waste (or 1 kg./month of acutely hazardous waste).	
17		CONUS CHEMICAL CO SITE 185 FOUNDRY ST	NEWARK 07105	Distance: .19 mi. Direction: NW Vista ID: 2122542
	NJD986595916	Generator Class	:Generators who generate at least 1000 kg./month of non-acutely hazardous waste (or 1 kg./month of acutely hazardous waste).	
		Generator Class	:Generators who generate at least 1000 kg./month of non-acutely hazardous waste (or 1 kg./month of acutely hazardous waste).	
		Generator Class	:Generators who generate at least 1000 kg./month of non-acutely hazardous waste (or 1 kg./month of acutely hazardous waste).	
17		HUMMEL LANOLIN CORP 185 FOUNDRY STREET	NEWARK 07105	Distance: .19 mi. Direction: NW Vista ID: 3417230
	NJD002175016	Generator Class	:Generators who generate at least 1000 kg./month of non-acutely hazardous waste (or 1 kg./month of acutely hazardous waste).	

RCRA-SmGen

MAP REF #	EPA ID / AGENCY ID	SITE NAME AND ADDRESS		
WITHIN 1/8 MILE				
14		NJ TNPK AUTH 339-355 AVENUE P	NEWARK 07101	Distance: .11 mi. Direction: SE Vista ID: 1275034
	NJD986587269	Generator Class	:Generators who generate less than 100 kg./month of non-acutely hazardous waste.	
WITHIN 1/8 TO 1/4 MILE				
16		PRAXAIR INC LINDEN DIVISION 360 AVENUE P	NEWARK 07105	Distance: .18 mi. Direction: S Vista ID: 437406
	NJD080621881	Generator Class	:Generators who generate less than 100 kg./month of non-acutely hazardous waste.	
16		NJ TNPK AUTH 357-405 AVENUE P	NEWARK 07101	Distance: .14 mi. Direction: S Vista ID: 1275033
	NJD986587251	Generator Class	:Generators who generate less than 100 kg./month of non-acutely hazardous waste.	

RCRA-TSD

MAP REF #	EPA ID / AGENCY ID	SITE NAME AND ADDRESS		
		WITHIN 1/4 TO 1/2 MILE		
6		REICHHOLD CHEMICALS INC 400 DOREMUS AVE	NEWARK 07105	Distance: .42 mi. Direction: SE Vista ID: 3417075
	NJD092217892	Process Codes :Tank Storage Container Storage		
		WITHIN 1/2 TO 1 MILE		
11		MCKESSON ENVIROSYSTEMS 600 DOREMUS ST	NEWARK 07105	Distance: .67 mi. Direction: S Vista ID: 265031
	NJD002153922	Process Codes :Other Treatment Tank Storage Container Storage		
24		FEDERATED METALS 150 ST CHARLES ST PO BOX 959	NEWARK 07101	Distance: .60 mi. Direction: W Vista ID: 3416337
	NJD079320495	Process Codes :Other Treatment Surface Impoundment Storage Container Storage Landfill		

RCRA-Transp

MAP REF #	EPA ID / AGENCY ID	SITE NAME AND ADDRESS		
		WITHIN 1/8 TO 1/4 MILE		
13		ASHLAND CHEM CO	NEWARK	Distance: .16 mi.
		221 FOUNDRY ST	07105	Direction: NE
				Vista ID: 28955
	NJD060803905	Transporter Status :Engaged in the off-site transportation of hazardous waste		
17		E SPILL-SUN CHEMICAL	NEWARK	Distance: .19 mi.
		FOUNDRY ST	07105	Direction: NW
				Vista ID: 2122542
	NJD986595916	Transporter Status :Engaged in the off-site transportation of hazardous waste		

ERNS

MAP REF #	EPA ID / AGENCY ID	SITE NAME AND ADDRESS		
		WITHIN 1/8 MILE		
12		UNKNOWN 294 AVE P	NEWARK 07105	Distance: .07 mi. Direction: E Vista ID: 200159090

Spill Date:06/07/1988
Case Number:
Spill Location:294 AVE P
Spill City:NEWARK
Spill State:NJ
Spill Zip:
Spill County:ESSEX
Source/Agency:
Material Spilled:CHLORINE , 0.00, UNK
Medium Affected: Air
Waterway Affected:N/A

 For more information call: (619) 450-6100

SPL

MAP REF #	EPA ID / AGENCY ID	SITE NAME AND ADDRESS		
WITHIN 1/8 TO 1/4 MILE				
13		ASHLAND CHEM CO 221 FOUNDRY ST	NEWARK 07105	Distance: .16 mi. Direction: NE Vista ID: 28955
		State Status : STATE REMEDIAL ACTION LIST STATE Detailed Site Description Available Call 1-800-877-3824 for Details.		
17		E SPILL-SUN CHEMICAL FOUNDRY ST	NEWARK 07105	Distance: .19 mi. Direction: NW Vista ID: 2122542
		State Status : STATE REMEDIAL ACTION LIST STATE Detailed Site Description Available Call 1-800-877-3824 for Details.		
WITHIN 1/4 TO 1/2 MILE				
6		TEXTRON INCORPORATED 400 DOREMUS AVENUE	NEWARK 07105	Distance: .42 mi. Direction: SE Vista ID: 3672082
		State Status : STATE REMEDIAL ACTION LIST STATE Detailed Site Description Available Call 1-800-877-3824 for Details. State Status : STATE REMEDIAL ACTION LIST STATE Detailed Site Description Available Call 1-800-877-3824 for Details.		
WITHIN 1/2 TO 1 MILE				
1		GETTY 86 DOREMUS AVE	NEWARK 07105	Distance: .65 mi. Direction: NE Vista ID: 170463
		State Status : STATE REMEDIAL ACTION LIST STATE Detailed Site Description Available Call 1-800-877-3824 for Details.		

SPL

MAP REF #	EPA ID / AGENCY ID	SITE NAME AND ADDRESS		
		WITHIN 1/2 TO 1 MILE		
4		BAYONNE BARREL & DRUM CO 150 RAYMOND BLVD.	NEWARK 07105	Distance: .74 mi. Direction: NE Vista ID: 3418697
		Lead Agency : STATE STATE Detailed Site Description Available Call 1-800-877-3824 for Details.		
8		V.OTTILIO & SONS RAYMOND BLVD & BLANCHARD ST	BELLEVILLE 07109	Distance: .70 mi. Direction: NE Vista ID: 3416589
		Lead Agency : STATE STATE Detailed Site Description Available Call 1-800-877-3824 for Details. Lead Agency : STATE STATE Detailed Site Description Available Call 1-800-877-3824 for Details.		
21		DIAMOND SHAMROCK 80 & 120 LISTER AVE	NEWARK 07105	Distance: 1.00 mi. Direction: NW Vista ID: 1428245
		Lead Agency : STATE State Status : SUPERFUND SITE STATE Detailed Site Description Available Call 1-800-877-3824 for Details.		
23		SCIENTIFIC CHEMICAL PROCESSING 411 WILSON AVE	NEWARK 07105	Distance: .69 mi. Direction: SW Vista ID: 3419127
		Lead Agency : STATE STATE Detailed Site Description Available Call 1-800-877-3824 for Details.		
25		IRONBOUND RECREATIONAL CENTER ST. CHARLES & ROME ST	NEWARK 07105	Distance: .64 mi. Direction: W Vista ID: 1432459
		Lead Agency : STATE STATE Detailed Site Description Available		

SPL

MAP REF #	EPA ID / AGENCY ID	SITE NAME AND ADDRESS		
		WITHIN 1/2 TO 1 MILE		
25		IRONBOUND RECREATIONAL CENTER ST. CHARLES & ROME ST	NEWARK 07105	Distance: .64 mi. Direction: W Vista ID: 1432459
		Call 1-800-877-3824 for Details.		
26		ALBERT STEEL & DRUM WILSON AVE & AVE L	NEWARK 07105	Distance: .77 mi. Direction: SW Vista ID: 10752
		Lead Agency : STATE STATE Detailed Site Description Available Call 1-800-877-3824 for Details.		
26		PRENTISS DRUG & CHEM CO 338 WILSON AVE	NEWARK 07105	Distance: .73 mi. Direction: SW Vista ID: 338543
		Lead Agency : STATE STATE Detailed Site Description Available Call 1-800-877-3824 for Details.		

LUST

MAP REF #	EPA ID / AGENCY ID	SITE NAME AND ADDRESS			
		WITHIN 1/4 TO 1/2 MILE			
2		LEHIGH PORTLAND CEMENT COMPANY 194 DOREMUS AVE		NEWARK 07105	Distance: .45 mi. Direction: NE Vista ID: 639252
	9009101329	Owner Name Owner Address Leak Cause	: LEHIGH PORTLAND CEME : 718 HAMILTON MALL : UNAVAILABLE	, PA	
18		WHITE ROSE MEAT CORP 425 AVENUE P		NEWARK 07105	Distance: .27 mi. Direction: SW Vista ID: 640847
	9107241115	Owner Name Owner Address Leak Cause	: WHITE ROSE MEAT : 425 AVE P : UNAVAILABLE	, NJ	

UST's

MAP REF #	EPA ID / AGENCY ID	SITE NAME AND ADDRESS		
		WITHIN 1/8 TO 1/4 MILE		
9		FRIEDMANS EXP INC. 241 AVENUE P	NEWARK 07105	Distance: .19 mi. Direction: NE Vista ID: 634683
	0012287	Number of Underground Tanks: 4		
13		ASHLAND CHEM CO 221 FOUNDRY ST	NEWARK 07105	Distance: .16 mi. Direction: NE Vista ID: 28955
	0150068	Number of Tanks: Not Reported		
17		HUMMEL LANOLIN CORP 185 FOUNDRY ST	NEWARK 07105	Distance: .19 mi. Direction: NW Vista ID: 3417230
	0142977	Number of Underground Tanks: 2		

VISTA NATIONAL RADIUS PROFILE

VISTA Report #: 5/032862-001

Date of Report: 12/30/93

UNMAPPABLE SITES

Unmappable sites are environmental risk sites that cannot be geocoded, but can be located by zip code or city name.

In general, a site cannot be geocoded because of inaccurate or missing locational information in the record provided by the agency. For many of these records, VISTA has corrected or added locational information by using U.S. Postal address validation files and proprietary programming that adds locational information from private industry address files. However, many site addresses cannot be corrected using these techniques and those sites cannot be mapped.

Of the sites that cannot be mapped, VISTA identifies those that have complete zip code or city name information. All ungeocoded sites that have a ZIP code in the radius are considered for inclusion. Ungeocoded sites that do not have a ZIP code but do have a street name are considered for inclusion if they have a city in the radius. An ungeocoded record may be excluded if it can be determined to be outside the relevant radius searched for a particular database.

VISTA NATIONAL RADIUS PROFILE

12/30/93

VISTA Report #: 5/032862-001

UNMAPPABLE SITES

CERCLIS

SITE NAME AND ADDRESS	VISTA ID	EPA ID / AGENCY ID
ROANOKE AVE: ROANOKE AVE, NEWARK 07105	356621	
Status : NOT PROP/CURR/DELE NPL		NJD980529747
Site Ownership : OTHER		
Lead Agency : NO DETERMINATION		
Site Events :		
Event Type : PRELIMINARY ASSESSMENT		
Event Type : DISCOVERY		
Lead Agency : FUND LEAD		
NEWARK DRIVE-IN: FOUNDRY ST., NEWARK 07105	1274229	
Status : NOT PROP/CURR/DELE NPL		NJD986578151
Site Ownership : UNKNOWN		
Lead Agency : NO DETERMINATION		
Site Events :		
Event Type : PRELIMINARY ASSESSMENT		
Event Type : DISCOVERY		
FOUNDRY STREET TRAILER: FOUNDRY ST, NEWARK 07105	3481115	
Status : NOT PROP/CURR/DELE NPL		NJD986639243
Site Ownership : UNKNOWN		
Lead Agency : NO DETERMINATION		
Site Events :		
Event Type : REMOVAL ACTION		
Lead Agency : FUND LEAD		
Event Type : DISCOVERY		
Description :A TRAILER CONTAINING 400-500 CONTAINERS OF UNKNOWN FLAMMABLE MATERIAL WAS ABANDONED ON FOUNDRY ST. - NEWARK, NJ.		

 For more information call: (619) 450-6100

943390084

RCRA-LgGen

SITE NAME AND ADDRESS	VISTA ID	EPA ID / AGENCY ID
NJTRO: MEDOWS YARD FACILITY, KEARNY 07032	297845	
Generator Class :Generators who generate at least 1000 kg./month of non-acutely hazardous waste (or 1 kg./month of acutely hazardous waste).		NJD981076011
USEPA REG 2/FOUNDRY ST WASTE OIL DUM: FOUNDRY STREET, NEWARK 07105	3417229	
Generator Class :Generators who generate at least 1000 kg./month of non-acutely hazardous waste (or 1 kg./month of acutely hazardous waste).		NJD981877426
MR & H A: AVENUE P, NEWARK 07105	3952580	
Generator Class :Generators who generate at least 1000 kg./month of non-acutely hazardous waste (or 1 kg./month of acutely hazardous waste).		NJD981080955
NJ TNPK AUTH: STRUCTURE E107.88, NEWARK 07105	4069253	
Generator Class :Generators who generate at least 1000 kg./month of non-acutely hazardous waste (or 1 kg./month of acutely hazardous waste).		NJD986639805

RCRA-SmGen

SITE NAME AND ADDRESS		VISTA ID	EPA ID / AGENCY ID
EBASCO SERVICES MATERIALS LAB: PORT KEARNY BLDG 100A, KEARNY 07032		4067129	
Generator Class	:Generators who generate less than 100 kg./month of non-acutely hazardous waste.		NJD986643591
NJDOT 0703154: RTES 1 & 9 SECTION 2AK OVER, NEWARK 07105		4069145	
Generator Class	:Generators who generate 100 kg./month but less than 1000 kg./month of non-acutely hazardous waste		NJD986641769
Generator Class	:Generators who generate 100 kg./month but less than 1000 kg./month of non-acutely hazardous waste		
Generator Class	:Generators who generate 100 kg./month but less than 1000 kg./month of non-acutely hazardous waste		
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Generator Class	:Generators who generate 100 kg./month but less than 1000 kg./month of non-acutely hazardous waste		

SPL

SITE NAME AND ADDRESS	VISTA ID	EPA ID / AGENCY ID
ESSEX COUNTY RESOURCE RECOVERY: BLANCHARD ST, NEWARK 07103	19054	
Lead Agency : STATE STATE Detailed Site Description Available Call 1-800-877-3824 for Details.		
HUB RECYCLING & SCRAP METAL: INTERNATIONAL WAY, NEWARK	1427132	
Lead Agency : STATE STATE Detailed Site Description Available Call 1-800-877-3824 for Details.		
ROUTE 508 EXPANSION: ROUTE 508 NEAR EXIT 15W OF NJ TURNPI, KEARNY 07032	1433471	
Lead Agency : STATE STATE Detailed Site Description Available Call 1-800-877-3824 for Details.		
NEW JERSEY TURNPIKE EXPANSION: BETWEEN EXITS 14 & 15E, NEWARK	3416361	
Lead Agency : STATE STATE Detailed Site Description Available Call 1-800-877-3824 for Details.		

 For more information call: (619) 450-6100

LUST

SITE NAME AND ADDRESS	VISTA ID	EPA ID / AGENCY ID
UTILITY BUILDING: INTERCHANGE 14 NJ TURNPIKE AUTHORITY, NEWARK	3417544	
Owner Name :		9006151340
Owner Address :		
Leak Cause : UNAVAILABLE		

 For more information call: (619) 450-6100

943390088

SWLF

SITE NAME AND ADDRESS	VISTA ID	EPA ID / AGENCY ID
BECUA TRANSFER STATION: , KEARNY 07032	3417089	
Facility Type : TRANSFER STATION		0239000093
Waste Type 1 : MIXED MUNICIPAL		
Waste Type 2 : BULKY WASTE		
Waste Type 3 : VEGETABLE WASTE		
Waste Type 4 : AGRICULTURAL		
Waste Type 5 : DRY WASTE		
BEDROCK STONE INC: , KEARNY	3985149	
		0907001177
ADVANCED ENTERPRISE RECYCLING: , NEWARK	3985182	
		0714001202

 For more information call: (619) 450-6100

943390089

UST's

SITE NAME AND ADDRESS	VISTA ID	EPA ID / AGENCY ID
KEARNY: RIVER TERMINAL, KEARNY 07032	1577307	
Number of Underground Tanks: 4 Contents:LEADED GAS,UNKNOWN,WASTE OIL,		
RIDGE PARK APTS SECTION 5: 155/165/175/185 GOLD&150/160 6ST, KEARNY 07032	3416364	
Number of Underground Tanks: 1 Contents:HEATING OIL,		0212528

DESCRIPTION OF DATABASES SEARCHED

Below are general descriptions and search parameters of the federal and state databases that VISTA searches for the National Radius Report.

FEDERAL DATABASES

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1) The US Department of Health and Human Services issues a health advisory recommending that people be removed from the site to avoid exposure.
2) The EPA determines that the site represents a significant threat.
3) The EPA determines that remedial action is more cost-effective than removal action.

U.S. EPA: CERCLIS

The CERCLIS List is a compilation by the EPA of the sites which the EPA has investigated or is currently investigating for a release or threatened release of hazardous substances pursuant to the Comprehensive Environmental Response, Compensation and Liability Act of 1980 (CERCLA or Superfund Act).

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STATE: SPL

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STATE: LUST

This is a database maintained by state or local agencies of known or suspected leaking underground storage tanks.

STATE: UST

This is a database maintained by state or local agencies of registered underground storage tanks.

STATE: SWLF

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ALLIANCE COLOR AND CHEMICAL COMPANY
DIVISION OF PFISTER CHEMICAL COMPANY
309-327 AVE P
NEWARK, ESSEX COUNTY, NEW JERSEY 07105
EPA # NJD045794971

GENERAL INFORMATION AND SITE HISTORY

Alliance Color and Chemical Company is located on 8.4 acres of land in Newark, Essex County, New Jersey. The area is in a heavily industrialized section of the city, with the closest residences approximately 1 mile from the site. The population within 2 miles of Alliance is approximately 49,300.

To the west the site is bordered by a tidal basin and the New Jersey Turnpike, to the east the site is bounded by Avenue P. The south side of the site is bounded by property belonging to the Newark Housing Authority (this property was an unregulated dump site that is being remediated), to the north the site is bounded by Conrail tracks and McGredor Street.

Alliance Chemical is located on Block 5020, Lots 3, 6, 8, 12 and 136. The lots are owned as follows: Lot 3-Pfister Chemical Inc., Linden Avenue, Ridgefield Park, New Jersey; Lots 6 and 136-Pfister Urban Renewal, Route 46, Ridgefield Park, New Jersey; Lot 8-Plum Point Realty Corporation, 33 Avenue P, Newark, New Jersey 07105; and Lot 12-Alliance Chemical and Color Inc., 33 Avenue P, Newark, New Jersey.

The site was first developed between 1945 and 1946 by the Sun Chemical Company. Sun Chemical's operations at the site are unknown. Further, with the exception of several Newark Fire Department Storage permits, information on chemicals used at the site are unknown.

In 1965 Alliance Color and Chemical purchased the site from Sun Chemical and began manufacturing speciality organics and pigment intermediates. In 1966 Alliance Color and Chemical was purchased by Pfister Chemical of Ridgefield Park, New Jersey, who retained the name Alliance.

SITE OPERATIONS OF CONCERN

Alliance Chemical manufactures organic chemicals, specifically dye and pigment intermediates and diazo compounds. Some of the chemicals used as raw materials by Alliance include paradichlorobenzene, aniline, acetic anhydride and beta-naphthol.

Sun Chemical and Alliance Chemical both used open unlined trenches to run liquid wastes through to an unlined lagoon. A review of aerial photographs and NJDEP files revealed that the lagoon was filled in without a plan being filed with the NJDEP. A photo interpretation was conducted on September 22, 1989 by Jim Mortimer of the NJDEP, Division of Fish, Game and Wildlife. That interpretation concluded the following: 1) the trench first appears in 1961 and remains visible in both 1971 and 1972 photos, 2) in 1974 the lagoon appears dry and the trench drained and 3) in 1978 the lagoon appears to contain water and the trench appears to be running into both the lagoon and the tidal basin. On January 7, 1980 an explosion and fire destroyed a building at Alliance during the first attempt to manufacture "Diazo 28". On January 10, 1980, NJDEP Representatives inspected Alliance due to the fire and explosion. During the inspection the lagoon was physically

observed and documented (Attachment A-1 & A-2).

As previously stated, Alliance Chemical manufactures intermediates for the textile and photographic industries. Alliance mixes muriatic acid, water and organic chemical reagents in a large vessel. There is a chemical reaction in which the intermediate is synthesized, then filtered and washed. In the synthesis step some material is washed free of product, then filtered and washed again. There are two waste streams from the process. One is a filter cake which is stored in drums and a sludge box, then manifested to a secure landfill in Michigan. The carbon clarification cake located in the waste unit was found to contain cyanide, phenols, ammonia, arsenic, cadmium, chromium, copper, lead, mercury, nickel and selenium (Attachments A-3 & A-4). The second is the waste acidic process water which runs into a neutralization tank.

Alliance's wastewater is treated in an in-ground neutralization tank where it is mixed with ammonia to a pH of about 7 then discharged into the sewer system of the Passaic Valley Sewerage Commission (PVSC). Alliance operates under PVSC Permit No. 20401080 which allows discharges with a pH factor of between 5 and 10.5. According to Anthony Gammaro of PVSC, Alliance was in violation of their discharge permit twice in 1988. According to Mr. Gammaro, on September 27, 1988 the PVSC monitoring equipment at Alliance was inspected by representatives of the PVSC. That inspection revealed that Alliance had been in violation of their permit by discharging wastewater with a pH of less than 5 from August 4, 1988 until September 6, 1988 for 35.25 hours or 4.4% of the monitored time. An inspection on October 27, 1988 revealed that Alliance had again been in violation from September 6, 1988 until October 6, 1988 for 10.5 hours or 1.45% of the total monitored time by discharging wastewater with a pH of greater than 10.5. These are the only two violations on file with the PVSC.

A RCRA Part A application was filed in November 1980 with the U.S. Environmental Protection Agency (USEPA) by Alliance. At that time Alliance listed their waste activity as treatment in tanks (T01). In May 1983 Alliance requested removal from treatment/storage/disposal (TSD) facility status. Alliance made this request following a Notice of Violation issued by the NJDEP, Division of Waste Management in 1982 for failing to submit an annual report in accordance with the Solid Waste Management Act (Attachment A-7). Alliance maintains that the only waste generated is 100,000 gallons of wastewater per day which undergoes "elementary neutralization" on site prior to discharge to the sewer. On May 18, 1988 Alliance was removed from TSD status (Attachments A-10 & A-11).

On August 3, 1983 an inspection of Alliance was conducted by the Industrial Investigation Unit of the NJDEP. That inspection revealed the disappearance of the lagoon and raised a question of dioxin contamination at the site. The question of possible dioxin contamination arose from the manufacture of Class II dioxin precursor chemicals 2-chloro-1,4-diethoxy-5-nitrobenzene and 5-chloro-2,4-dimethoxy aniline (Attachments A-12, A-13 & A-14).

In 1985, the E.C. Jordan Company of Portland, Maine was selected by the NJDEP to conduct a dioxin sampling episode at Alliance. The sampling was conducted on May 10, 1985. The analysis of the samples collected revealed no traces of 2,3,7,8-TCDD (Attachment A-15).

On May 21, 1986 the NJDEP, Division of Water Resources informed Alliance that a NJDPES permit was not required since their neutralization tank qualified as an Industrial Wastewater Management Facility (IWMF) under N.J.A.C. 7:26-9.1 (c) 12 and 12.1 (b) 3 (Attachment A-16, A-17 & A-18).

On June 29, 1989 the NUS Corporation completed a Preliminary Assessment of Alliance for the USEPA. The report raises concern over the former trench and lagoon areas of the site (see Attachment A-19 & A-20).

On October 3, 1989 representatives of the NJDEP, DHWM, BPA conducted a Pre-sampling Assessment of Alliance Chemical. At that time, Mr. Arthur Gusmano, Vice President of Alliance, stated that there had never been a lagoon on site. When shown a photo of the lagoon, Mr. Gusmano stated that the matter of the lagoon had been taken care of at a meeting in December 1980 between Alliance, the NJDEP and the USEPA in New York. A search of NJDEP and USEPA files has produced no such records, further, Alliance has been unable to produce any records of the meeting.

A sampling episode was conducted on October 19, 1989 by representatives of the NJDEP, DHWM, Bureau of Planning and Assessment. The analytical results of this episode show high levels of soil contamination which will be addressed later in this report.

Alliance Chemical has 16 bulk above ground storage tanks. The tanks are as follows:

Three 3,000 gallon #4 fuel oil tanks,
One 10,000 gallon #4 fuel oil tank,
One 4,000 gallon 98% sulfuric acid tank,
One 3,000 gallon 50% sulfuric acid tank,
One 15,000 gallon 38% hydrochloric acid tank,
One 3,000 gallon 38% hydrochloric acid tank,
One 10,000 gallon 38% hydrochloric acid tank,
One 4,800 gallon 50% zinc chloride solution tank,
One 7,600 gallon 50% caustic (sodium hydroxide solution) tank,
Two 9,000 gallon 20% aqua ammonia tanks,
One 5,600 gallon methanol tank,
One 4,000 gallon isopropyl alcohol tank,
One 5,600 gallon morpholine tank.

Alliance officials, in their contingency plan, maintain that there is a sufficient dike at each tank to contain a spill.

GROUNDWATER ROUTE

In the area of Alliance Chemical the Brunswick Formation is at a depth of approximately 55 feet. Its exact thickness is not known, however, it may be as thick as 5,000 feet. The unconsolidated zone between the water table and the bedrock is composed of Pleistocene deposits. These deposits, which are 55 feet thick in the area of the site, overlie the Brunswick Formation through practically all of the Newark area. The deposits consist of unconsolidated till and stratified glacial drift. The till is an unstratified, heterogeneous mixture of clay, boulders and sand. The drift is composed of sand and gravel.

The aquifer of concern is the Newark Group Brunswick Shale. Most wells are tapped into the extremely fractured upper portion of the aquifer, which is under modified water table conditions. The depth to the water table is 7 to 9.5 feet from the land surface. Groundwater is generally free to move in any direction and seek the level determined by factors affecting recharge and discharge. The least permeable continuous intervening stratum between the ground surface and the aquifer of concern is the silty clay with a permeability of 10^{-5} to 10^{-7} cm/sec.

There are no monitoring wells on site that have been reported to the NJDEP. The only monitoring well at Alliance was installed by Louis Berger and Associates, Inc. of 100 Halsted Street, East Orange, New Jersey. This well, MW-19E P#2613785-2, was installed during an ECRA study of the site by Berger for the New Jersey Turnpike Authority expansion project (Attachment A-21 & A-22). The results, if any, from this well remain unknown since the New Jersey Turnpike Authority will not release its findings to NJDEP at this time.

Alliance Chemical has no industrial wells, but rather uses city water which is supplied by five impound reservoirs in Pequannock and one shared reservoir in Wanaque. There are no potable wells within 4 miles of the site, however, there are a number of industrial wells in the area. These wells are contaminated, according to Paul Butler, Environmental Engineer for the City of Newark.

There is a high potential for groundwater contamination due to the site's past and present activities. High contaminant levels have been detected in soil samples from the facility which may have leached into groundwater due to the high water table.

SURFACE WATER ROUTE

The nearest downslope surface water is the Passaic River, which is located approximately 0.5 mile from Alliance. There is, however, a tidal basin located at the rear of Alliance Chemical which flows in an easterly direction. Although this basin is located upslope of the processing area it should be noted that the facility slope is less than 1%. As was previously stated, an interpretation of aerial photos was conducted. During this interpretation, a trench was observed running from Alliance into the tidal basin. This trench ran from the processing area, parallel with another trench. One trench then went into the lagoon while the other ran into the tidal basin. This basin is located on property belonging to the New Jersey Turnpike Authority and is less than 100 feet from the Alliance property.

The designated use of the Passaic River is SE3. SE3 waters include secondary contact recreation, as well as commercial and industrial uses. There are no surface water intakes within 4 miles of the site. There are no known endangered species habitats within 1 mile of Alliance.

The potential for contamination of the tidal basin via runoff is high. Soil sampling at surface level has revealed high contaminant levels and Alliance is located on a 100 year flood plain. Should heavy rain fall at the site, surface contamination could be easily washed into the basin. There are no known episodes of sampling of the tidal basin.

AIR ROUTE

Alliance Chemical has no known processes which discharge to air. Alliance was issued a Notice of Prosecution on June 6, 1977 for emitting visible smoke from a standby boiler (Attachment B-11).

Due to the materials used and stored at Alliance, the potential for release to air is high.

SOIL

There have been several episodes of soil sampling at Alliance. The first episode was conducted by the NJDEP on November 25, 1980. No parameters are given in the report (Attachment C-2). At that time, two samples were collected in the area of the lagoon. Results of analysis by Stablex-Reutter Inc. showed xylene at 1,100 ppb, ethylbenzene at 298 ppb and Aroclor 1254 at levels of 27,000 and 23,000 ppb. The high PCB levels were later corrected to 2,700 and 2,300 ppb (Attachments C-4 & C-7).

A second sampling event took place on December 10, 1980. At that time the NJDEP, Division of Hazardous Waste Management collected six samples of sludge from the acid pit area. There are no reports addressing parameters for detection nor is there a sampling plan. The samples were taken to the NJDEP laboratory set up at the Goose Farm site in Plumstead Township, Ocean County, New Jersey. There are no records of an analysis being performed on these samples (Attachments C-10, C-11 & C-12).

A sampling episode was conducted on April 22, 1981 by of the NJDEP. At that time samples were collected from the trench at the rear of the property. There are no records of analysis or where these samples were sent (Attachments C-15, C-16 & C-17).

On May 10, 1985, the E.C. Jordan Company of Portland, Maine conducted a sampling episode at Alliance Chemical under a contract with the New Jersey Department of Environmental Protection. At that time a total of nine samples were collected for 2,3,7,8-TCDD analysis. Seven of the samples were collected at the soil surface, including one duplicate, and two were collected in the sub-surface. The samples were sent to Environmental Testing and Certification Corporation of Edison, New Jersey for analysis. The analysis took place on May 26, 1985 and no 2,3,7,8-TCDD was detected (Attachment A-15).

A Pre-sampling Assessment by representatives of the NJDEP, DHWM, BPA on October 3, 1989 revealed numerous areas of soil staining throughout the site. During the inspection, puddles were observed with a sheen at several locations. Further, concrete areas around the wastewater trenches were stained with multi-colored substances. The area where the former lagoon was located was void of vegetation. The soil contained numerous pieces of building material, such as bricks. It is believed that some of this fill came from the building which was destroyed in the January 1980 explosion and fire.

A sampling episode was conducted by representatives of NJDEP, Division of Hazardous Waste Management, Bureau of Planning and Assessment on October

19, 1989. At that time eleven samples were collected for Target Compound List plus 30 peak analysis (TCL + 30). Additionally, five samples were collected for 2,3,7,8-TCDD analysis and three others for Petroleum Hydrocarbon (PHC) analysis. Results of analysis show elevated levels of volatiles and semi-volatile organics as well as high PHCs. No 2,3,7,8-TCDD was detected (Tables 1 & 2). One soil sample had a pH of 2 while another had a pH of 5.

DIRECT CONTACT

The potential for direct contact by the public is low. Alliance has a 7 foot chain link fence around the facility. Further, the site is operational 24 hours a day and is in a non-residential area. The potential for employee contact is high due to site operations, storage and surface level contaminants.

FIRE AND EXPLOSION

On January 7, 1980 an explosion and fire took place at Alliance. The fire was discovered by the Newark Fire Department Arson Squad. Seven workers were injured in the incident, four of them were treated and released while the remaining three required hospitalization. The Newark Fire Department listed this incident as accidental. Records obtained from the U.S. Labor Department, Occupational Safety and Health Administration (OSHA) showed the fire to have been caused mostly by negligence. According to an OSHA report issued on February 14, 1980 Alliance was attempting to manufacture "Diazo 28." The report points out that, "reactivity or instability was not determined", "thermal tests were not taken", "no pilot plant batches were run" and "reaction heats were not determined". The report further points out that "chemical operators were not informed of the hazard that may have been encountered during manufacturing of Diazo 28". Finally, the report points out that the wrong reaction vessel was in use at the time (Attachments D-5 & D-6).

Additional incidents of employee injury and improper fire training are documented in a 1983 OSHA report (Attachment D-11).

No fire inspection has been conducted at Alliance in over two years. According to Captain Vince Ladd of the Newark Fire Department Inspection Bureau the reason for the lack of inspections is due to the lack of inspectors. Captain Ladd did point out that Alliance had not registered with the State Bureau of Fire Safety in according with State law.

The potential for fire and explosion at Alliance remains high due to materials stored there and the lack of personnel training.

ADDITIONAL CONSIDERATIONS

There is limited vegetation at Alliance, vegetation that is present is stressed. There is no known damage to fauna. Damage to off-site property is unknown. Alliance's past practice of discharging into the tidal basin at the rear of their property may have lead to off-site contamination.

ENFORCEMENT ACTIONS

Alliance was cited by the NJDEP, DHWM, Bureau of Metro Enforcement for the following violations on May 29, 1987: 1) failure to document training 2) failure to submit current lay out of facility, 3) failed to document fire inspections 4) contingency plan failed to describe actions in emergencies 5) failed to describe agreements with authorities 6) failed to have address and phone number of emergency personnel and 7) no emergency equipment.

Further, on May 29, 1987 Alliance was cited by the NJDEP, DHWM, Bureau of Metro Enforcement for: 1) spill of a hazardous substance and 2) non-notification of the spill to the Department (Attachments E-1 & E-2). This action was taken as a result of an ammonia spill.

SUMMARY OF SAMPLING DATA

1. Sampling date: May 10, 1985
Sampled by: E.C. Jordan Company
P.O. Box 7050, DTS
Portland, Maine 04112
Samples: Nine soil samples were collected
Laboratory: Environmental Testing and Certification Corporation
284 Raritan Center Parkway
Edison, New Jersey 08837
Certification #12257
Parameters: 2,3,7,8-TCDD
Sample description:
1. All samples were collected at 0 to 12 inches.
2. Samples were collected at the rear of the site in the area of the former lagoon as well as in the area of the neutralization tank.

Contaminants detected: No 2,3,7,8-TCDD was detected.
QA/QC: There were no records that could be found regarding any QA/QC review being conducted.
File location: NJDEP/DHWM/Metro Enforcement
West Orange, New Jersey

2. Sampling date: October 19, 1989
Sampled by: NJDEP, Bureau of Planning and Assessment
Division of Hazardous Waste Management
Samples: A total of eleven soil samples were collected, one of which was a duplicate.

A. Laboratory: Envirodyne Engineering
1908 Innerbelt Business Center
St. Louis, MO 63114-5700
Certification # Not certified
Parameters: All samples were analyzed for Target Compound List + 30 peaks and five additional samples for 2,3,7,8-TCDD

B. Laboratory: Analytikem
28 Springdale Road
Cherry Hill, New Jersey 08003
Certification # 04012
Parameters: Three samples for Petroleum Hydrocarbons
Sample description:
1. All samples were collected at depths from 0 to 6 feet.
2. Samples were collected at the rear of the site in the area of the former lagoon and trench. Additional samples were collected from several piles of soil on site.

Contaminants detected: See Tables # 1 and 2
QA/QC: Both quality assurance and quality control reports are pending from BEMQA. NJDEP Chain-of-Custody forms were used for all samples collected and a 2, 3, 7, 8-TCDD proficiency sample was included.

File location: New Jersey Dept. of Environmental Protection
Division of Hazardous Waste Management
Bureau of Planning and Assessment
65 Prospect Street
Trenton, New Jersey

PRIORITY DESIGNATION

This site is assigned a medium priority designation, based on available information and the potential for groundwater, surface water and air contamination.

RECOMMENDATIONS/CONCLUSIONS

Due to conditions at Alliance Chemical it is recommended that the New Jersey Department of Environmental Protection take action to have Alliance begin soil remediation. Additionally, the closing of the lagoon should be pursued.

It is recommended that additional samples be collected at Alliance to determine contamination levels in other areas of the site. Samples should be collected from the front part of the property (facing Avenue P). This area was the site of a former junkyard. Additional samples should be collected at depth from the area of the former lagoon to determine other contaminants present, their levels and vertical extent at depth of contamination.

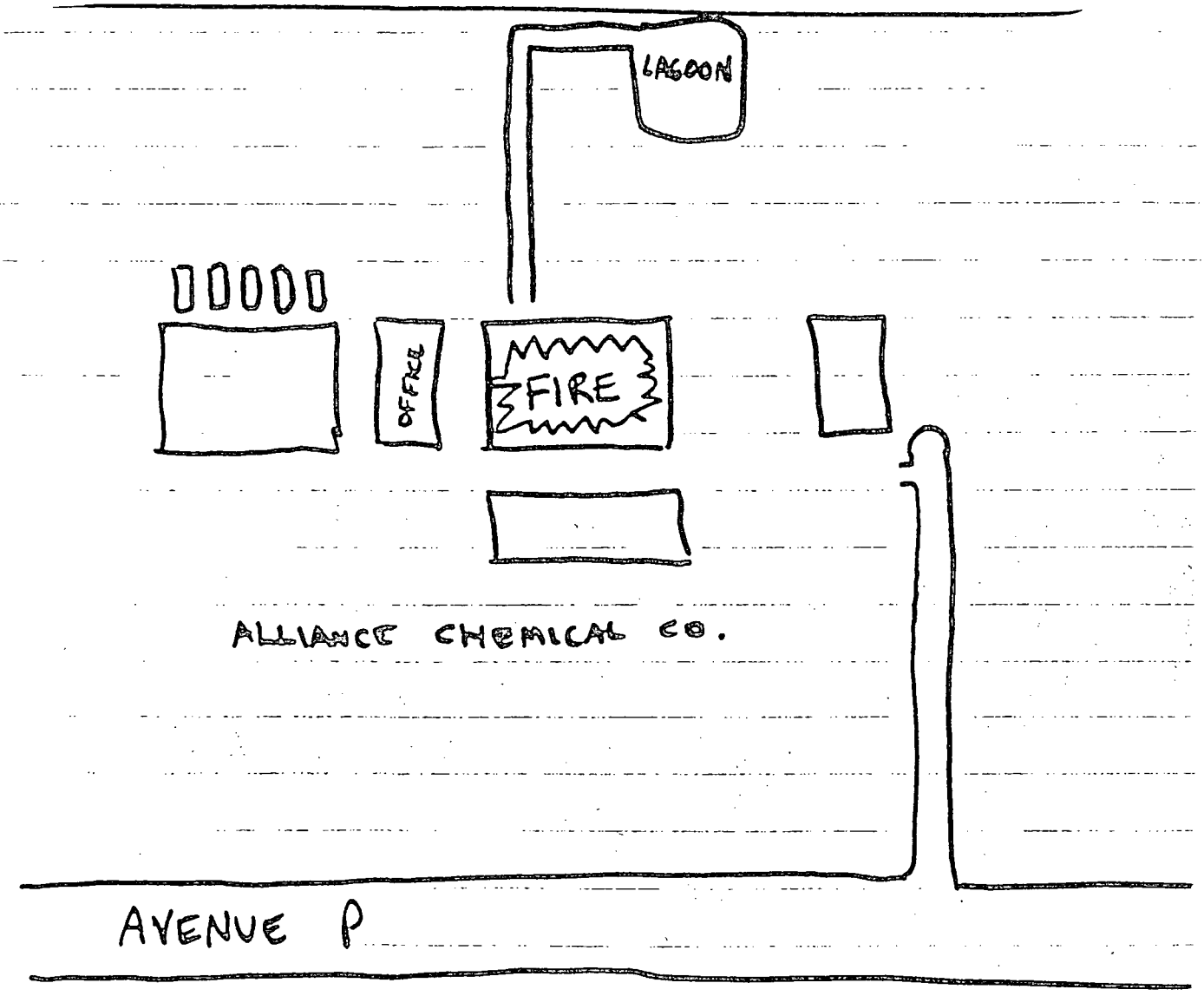
Samples of both soil and water should be collected from the area of the tidal basin, this area may have been the scene of an unpermitted discharge from a wastewater trench.

It is further recommended that groundwater monitoring be initiated. During the October 19, 1989 sampling episode conducted by representatives of the NJDEP, DHWM, BPA water was encountered at a depth of approximately 5 feet. Soil contaminants may be leaching into groundwater due to the high water table.

Submitted by:

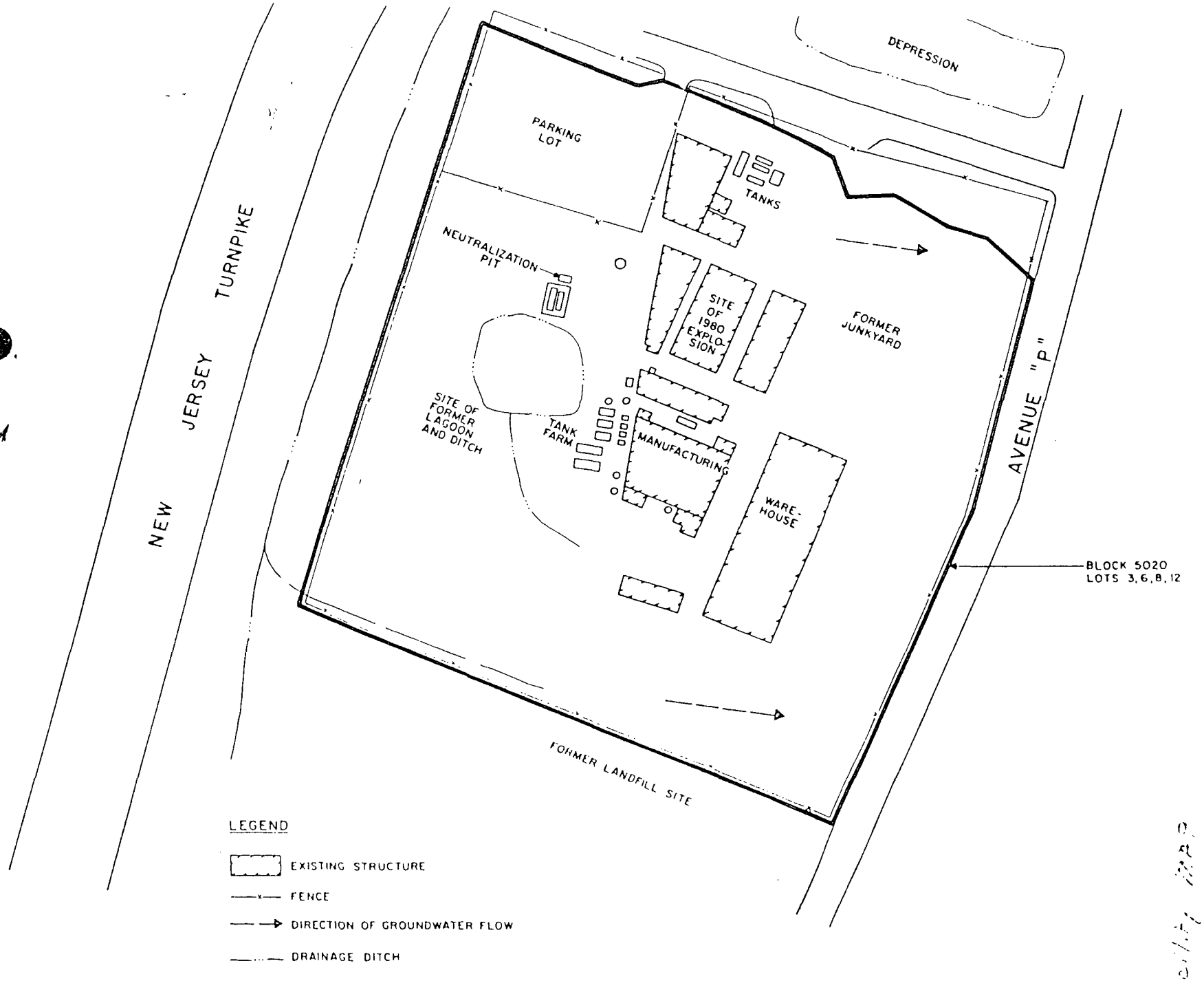
Jerry O'Donnell
HSMS IV
Bureau of Planning and Assessment
January 24, 1990

1/10/80 PFISTER - ALLIANCE CHEMICAL
NEWARK, N.J.



ATTACHMENT

943390107



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A SITE PLAN DATED APRIL 15,
AM . COLOR AND CHEMICAL CO.
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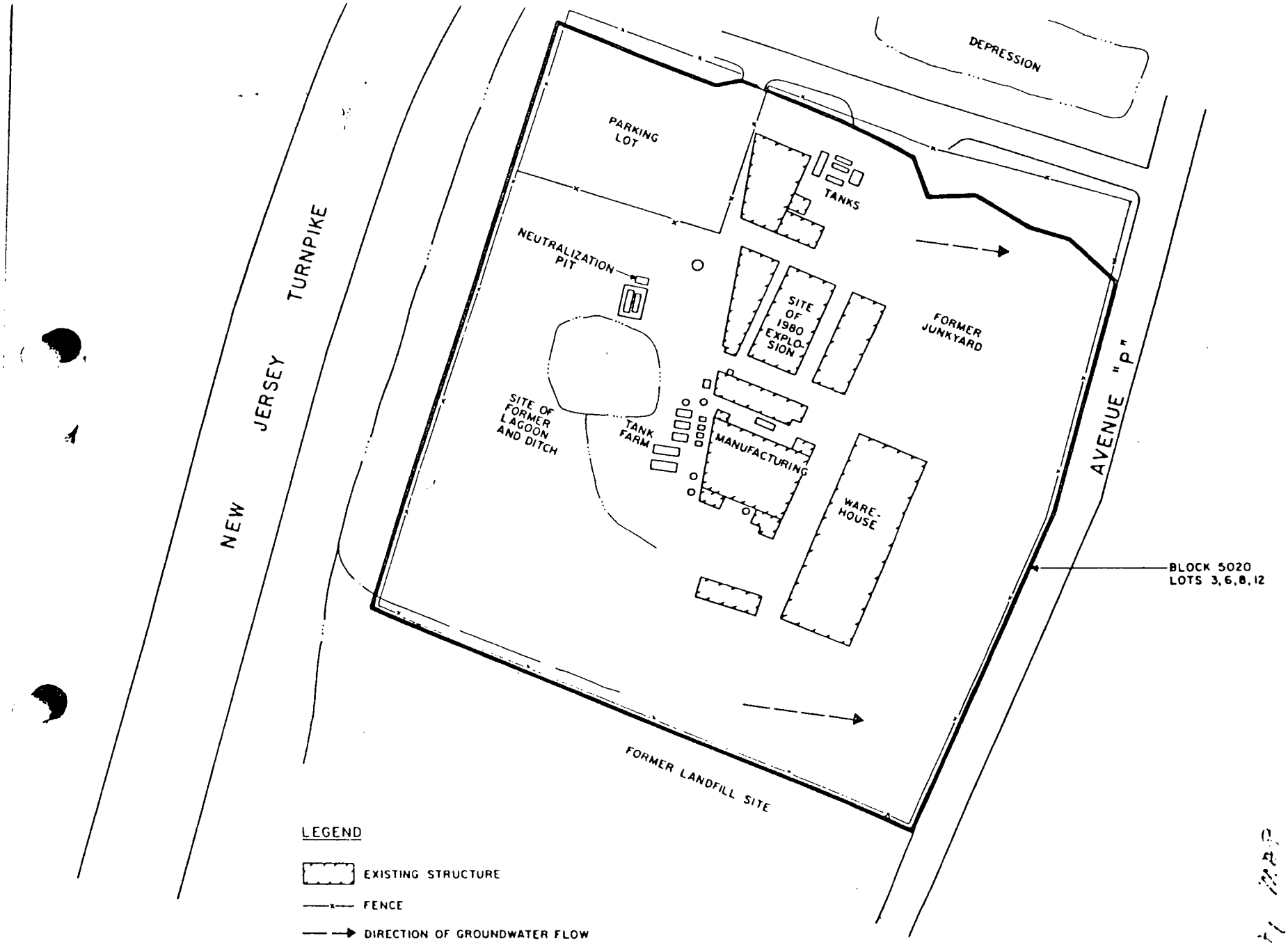

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A SITE PLAN DATED APRIL 15,
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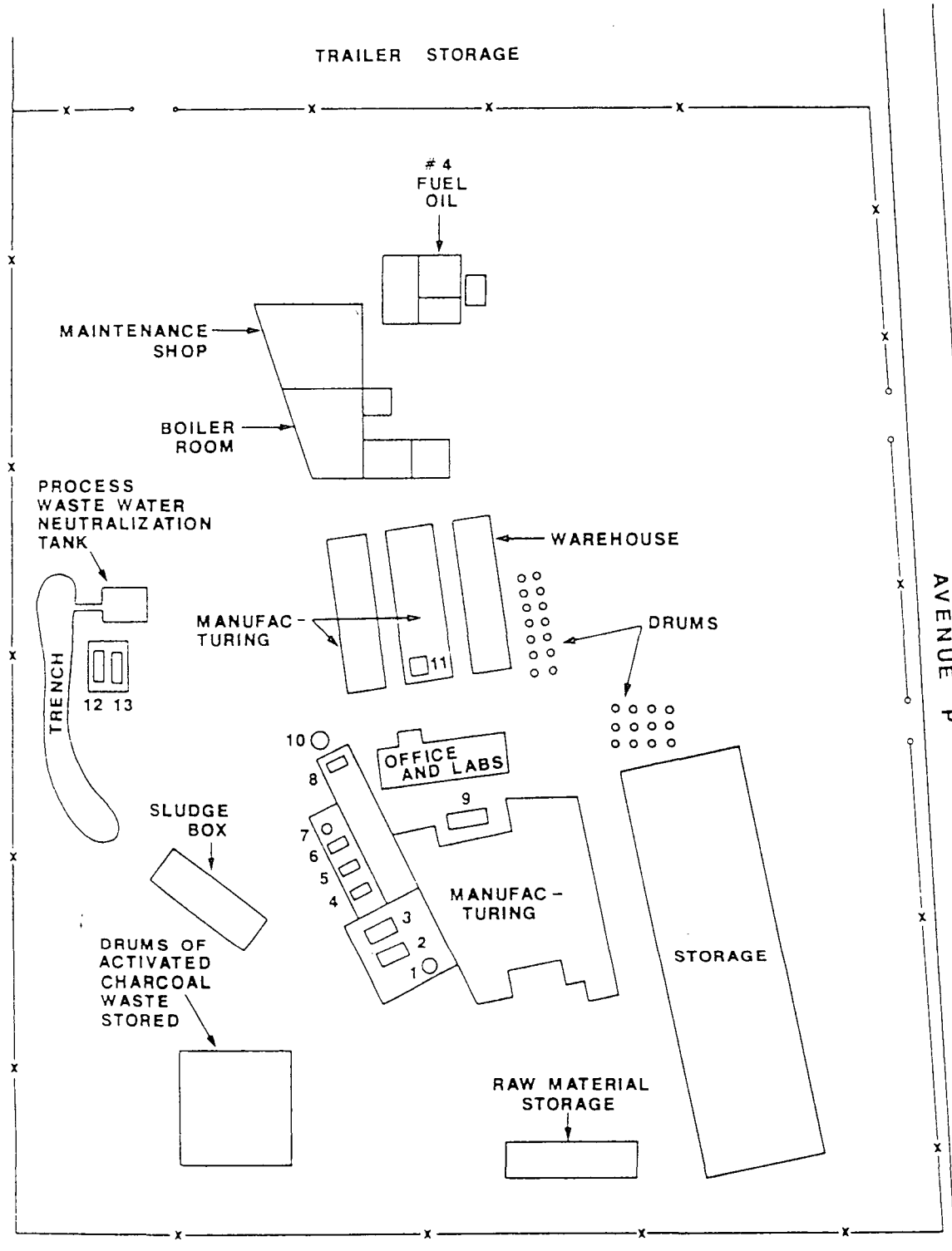


TANK FARM CODE

1. 50% ZINC CHLORIDE
2. HYDROCHLORIC ACID
3. HYDROCHLORIC ACID
4. MORPHOLINE
5. METHANOL
6. PROPYLENE GLYCOL
7. ISOPROPYL ALCOHOL
8. 98% SULFURIC ACID
9. 50% CAUSTIC
10. 50% SULFURIC ACID
11. HYDROCHLORIC ACID
12. AQUA AMMONIA
13. AQUA AMMONIA

943390110

FIGURE 2

SITE MAP

ALLIANCE CHEMICAL INC., NEWARK, N.J.

NOT TO SCALE

NUS CORPORATION

TABLE - 1

SITE: Alliance Chemical
LOCATION: 309-327 Ave P
Newark, Essex County, N. J.

SUMMARY OF SAMPLING DATA
VOLATILES

DATE SAMPLED October 19, 1984
SAMPLE NO.
MATRIX - Soil
UNITS

	S-1	S-2	S-3	S-4	S-5	S-7	S-8	S-9	S-10	S-11	S-13
Chloromethane											
Bromomethane											
Vinyl Chloride											
Chloroethane											
Methylene Chloride	28	12,000	20(JD)				12		17(JD)	23	18D
Acetone	61	8,500	110(D)				44	580(J)	300(D)	61	48 BD
Carbon Disulfide											
1,1-Dichloroethene											
1,1-Dichloroethane											
1,2-Dichloroethene											
Chloroform											
1,2-Dichloroethane											
2-Butanone											
1,1,1-Trichloroethane											
Carbon Tetrachloride											
Xylenes	9	190,000 E	140 D	890(D)	930(D)	1100		1800	30(JD)	63	84D)
			211	1235	570	33300	20	19400	1007	426	25

SUMMARY OF SAMPLING DATA
VOLATILES (CONT.)

DATE SAMPLED Oct. 19, 1989
SAMPLE NO.
MATRIX - Soil
UNITS

	S-1	S-2	S-3	S-4	S-5	S-7	S-8	S-9	S-10	S-11	S-13
Vinyl Acetate											
Bromodichloromethane											
1,1,2,2-Tetrachloroethane			10 JD								
1,2-Dichloropropane											
trans-1,3-Dichloropropene											
Trichloroethene											
Dibromochloromethane											
1,1,2-Trichloroethane											
Benzene			1	18 (JD)						7	5 JD
cis-1,3-Dichloropropene											
Bromoform											
4-Methyl-2-Pentanone											
2-Hexanone											
Tetrachloroethene											
Toluene		5,400	220 (D)	420 (D)					49 D)	15	16 D)
Chlorobenzene	15	310,000 (E)	31 (D)	1200 (D)	11000		6		29 (JD)	130	260
Ethylbenzene		32,000		180 (D)	210 (J)	1400		370 (J)		18	22 J

TABLE-2

SUMMARY OF SAMPLING DATA
SEMI-VOLATILE COMPOUNDS

DATE SAMPLED Oct. 19, 1989
SAMPLE NO.
MATRIX - Soil
UNITS

	S-1	S-2	S-3	S-4	S-5	S-7	S-8	S-9	S-10	S-11	S-
Phenol											
bis(2-Chloroethyl) ether											
2-Chlorophenol											
1,3-Dichlorobenzene					43(J)						
1,4-Dichlorobenzene		4,300 (J)		4,600 (J)	730 (J)	520 (J)		120 (J)			
Benzyl alcohol											
1,2-Dichlorobenzene											
2-Methylphenol				2,900 (J)							
bis(2-Chloroisopropyl) ether											
4-Methylphenol											
N-Nitroso-di-n-propylamine											
Hexachloroethane											
Nitrobenzene											
Isophorone											
2-Nitrophenol											
2,4-Dimethylphenol											
Benzoic acid											
TT/											

SUMMARY OF SAMPLING DATA
SEMI-VOLATILE COMPOUNDS (CONT.)

DATE SAMPLED - Oct 19, 1989
SAMPLE NO.
MATRIX - Soil
UNITS

	S-1	S-2	S-3	S-4	S-5	S-7	S-8	S-9	S-10	S-11
bis (2-Chloroethoxy) methane										
2,4-Dichlorophenol				14,000 (J)	7400		280 (J)			
1,2,4-Trichlorobenzene	28,000 (J)	7600 (J)	5200 (J)	13,000 (J)	5200	140 (J)				
Naphthalene	8,700 (J)	2700 (J)		3100 (J)	1300 (J)	6600	1300 (J)	25000		
4-Chloroaniline					2600 (J)					
Hexachlorobutadiene										
4-Chloro-3-methylphenol										
2-Methylnaphthalene					2000 (J)	1000 (J)	1100 (J)	1300 (J)		
Hexachlorocyclopentadiene										
2,4,6-Trichlorophenol										
2,4,5-Trichlorophenol				3,600 (J)						
2-Chloronaphthalene										
2-Nitroaniline										11000
Dimethylphthalate										
Acenaphthylene						110 (J)	280 (J)	180 (J)		
2,6-Dinitrotoluene										

SUMMARY OF SAMPLING DATA
SEMI-VOLATILE COMPOUNDS (CONT.)

DATE SAMPLED - OCT. 19, 1989
SAMPLE NO.
MATRIX - Soil
UNITS

	S-13
bis (2-Chloroethoxy) methane	
2,4-Dichlorophenol	
1,2,4-Trichlorobenzene	
Naphthalene	
4-Chloroaniline	
Hexachlorobutadiene	
4-Chloro-3-methylphenol	
2-Methylnaphthalene	
Hexachlorocyclopentadiene	
2,4,6-Trichlorophenol	
2,4,5-Trichlorophenol	
2-Chloronaphthalene	
2-Nitroaniline	110,000(J)
Dimethylphthalate	
Acenaphthylene	
2,6-Dinitrotoluene	

SUMMARY OF SAMPLING DATA
SEMI-VOLATILE COMPOUNDS (CONT.)

DATE SAMPLED - Oct 19, 1989
SAMPLE NO.
MATRIX - Soil
UNITS

	S-1	S-2	S-3	S-4	S-5	S-7	S-8	S-9
3-Nitroaniline								
Acenaphthene						520 (J)		560
2,4-Dinitrophenol								
4-Nitrophenol								
Dibenzofuran						340 (J)	110(J)	370(J)
2,4-Nitrotoluene Dinitrotoluene							54J	
Diethylphthalate								
4-Chlorophenyl-phenylether								
Fluorene						560 (J)	240(J)	630
4-Nitroaniline								
4,6-Dinitro-2-methylphenol								
N-Nitrosodiphenylamine						170 (J)		
4-Bromophenyl-phenylether								
Hexachlorobenzene								
Pentachlorophenol								
Phenanthrene			3900(J)	2300J		2900(J)	2200(J)	3500
Anthracene				1905		580(J)	920(J)	860

SUMMARY OF SAMPLING DATA
SEMI-VOLATILE COMPOUNDS (CONT.)

DATE SAMPLED - Oct. 19, 1987
SAMPLE NO.
MATRIX - Soil
UNITS

	S-1	S-2	S-3	S-4	S-5	S-7	S-8	S-9	S-10	
Di-n-butylphthalate					710	350(JB)		220(JB)		
Fluoranthene				2800(J)	5700	4500(J)	5400(J)	5150		
Pyrene				4800(J)	3100(J)	2400(J)	4500(J)	2500		
Butylbenzylphthalate								140(J)		
3,3-Dichlorobenzidine		16,000(J)			1,800,000E					
Benzo (a) anthracene	1,000,000				3500(J)	1300(J)	2700(J)	1400		
Chrysene	31,000(J)				4000(J)	1500(J)	2700(J)	1500		
bis(2-Ethylhexyl) phthalate	20,000(J)			5900(J)	2200(J)	24000(B)	170(JB)	15,000(B)		
Di-n-octylphthalate								72(J)		
Benzo (b) fluoranthene					4400(J)	2300(J)	4500(J)	2300		
Benzo (k) fluoranthene										
Benzo (a) pyrene					3700(J)	980(J)	2400(J)	1100		
Indeno (1,2,3-cd) pyrene					4,000(J)	820(J)	790(J)	830(J)		
Dibenz (a,h) anthracene					660(J)			110(J)		
Benzo (g,h,i) perylene					2800(J)	760(J)	690(J)	840(J)		

SUMMARY OF SAMPLING DATA
SEMI-VOLATILE COMPOUNDS (CONT.)

DATE SAMPLED Oct 19, 1989
SAMPLE NO.
MATRIX - Soil
UNITS

	S-13
Di-n-butylphthalate	
Fluoranthene	
Pyrene	
Butylbenzylphthalate	
3,3-Dichlorobenzidine	
Benzo (a) anthracene	
Chrysene	
bis(2-Ethylhexyl) phthalate	55000 (J)
Di-n-octylphthalate	
Benzo (b) fluoranthene	
Benzo (k) fluoranthene	
Benzo (a) pyrene	
Indeno (1,2,3-cd) pyrene	
Dibenz (a,h) anthracene	
Benzo (g,h,i) perylene	

TABLE-3

SUMMARY OF SAMPLING DATA
PESTICIDES AND PCBs

DATE SAMPLED - Oct. 19, 1989
SAMPLE NO.
MATRIX - Soil
UNITS

None Detected

alpha-BHC
beta-BHC
delta-BHC
gamma-BHC
Heptachlor
Aldrin
Heptachlor epoxide
Endosulfan I
Dieldrin
4,4' -DDE
Endrin
Endosulfan II
4,4' -DDD
Endosulfan sulfate
4,4' -DDT
Methoxychlor
Endrin ketone

SUMMARY OF SAMPLING DATA
PESTICIDES AND PCBs (CONT.)

DATE SAMPLED - OCT 19, 1989
SAMPLE NO.
MATRIX - Soil
UNITS

	S-1	S-2	S-3	S-4	S-5	S-7	S-8	S-9	S-10	S-11	S-13
alpha-Chlordane											
gamma-Chlordane											
Toxaphene											
Aroclor-1016											
Aroclor-1221											
Aroclor-1232											
Aroclor-1242											
Aroclor-1248	16,660 (D)					5000 (D)		4900 (D)			
Aroclor-1254						4900 (D)					
Aroclor-1260											

TABLE -4

SUMMARY OF SAMPLING DATA
METALS
PPM

DATE SAMPLED - OcT 19,1989
SAMPLE NO.
MATRIX - So.1
UNITS

	S-1	S-2	S-3	S-4	S-5	S-7	S-8	S-9	S-10	S-11	S-13
Aluminum	1630	4540	5400	5350	5250	4630	3010	4950	1420	2730	3490
Antimony						17.8					
Arsenic	3.5	4.1	6.3	6.3	15.4	7.9	5.5	8.2	3.2	6.1	6.9
Barium	58.2	211	361	811	1420	201	50.9	289	68.9	52.8	52.2
Beryllium	2.7	2.9	4.2	3.7	4.0	2.4	2.3	2.9	2.9	8.0	5.6
Cadmium	1.7	3.8	5.5	11.8	10.9	2.2		6.0		141	17.1
Calcium	3920	8530	5860		3440	1830	7320	6790		3730	4960
Chromium	92.6	56.9	26	58.1	38.9	30.4	4.8	61.9	16.3	19.5	44.0
Cobalt											
Copper	103	244	139	207	254	267	62.7	1050	90.9	118	130
Iron	23700	19100	26700	25200	29600	15800	13300	17100	16900	43300	58200
Lead	180	475	420	773	1430	632	171	1040	170	194	250
Magnesium	1580	2350	2430	2760		1660		2250		2620	
Manganese	1550	258	258	354	339	158	730	219	61.9	240	261
Mercury	96.3	2.2	0.27	2.0	1.4	2.7	1.7	2.0	0.28	0.79	0.69
Nickel	36.5	28.5	25.4	39.6	32.0	33.2	13.0	49.5	15.3	30.1	52
Potassium		1580	1890	1840				1870			

SUMMARY OF SAMPLING DATA
METALS (CONT.)

DATE SAMPLED Oct 19, 1984
SAMPLE NO.
MATRIX - Soil
UNITS

	S-1	S-2	S-3	S-4	S-5	S-7	S-8	S-9	S-10	S-11	S-13
Selenium					2.5			1.8			
Silver											
Sodium	1480			1020							
Thallium											
Vanadium	17.5	19.9	28.5	70.3	44.3	18.8		21.7	12.4	17.3	24.5
Zinc	50.2	5410	7590	8270	13600	608	342	2500	701	5240	16000
Cyanide	0.25	2.6	1.5	4.1	1.4	1.6	0.63	1.4	3.4	16.3	12.3

Other

SAMPLE TYPE/ NUMBER	BSA NUMBER	TIME COLLECTED	SAMPLERS	DESCRIPTION/LOCATION
Soil-1 TCL+30 VO's	10199826	1037-1042	K. Kloo D. Maltese	Collected at 3 inches and described as dark, silty, fine Soil, AREA WAS void of vegetation. Located at North west corner by fence
Soil-2 TCL+30 VO's DioXIN	10199827	1059-1115	D. Maltese	Collected at a depth of six feet, Described as dark silty, soil with plastic debris and an organic odor. The area is slightly west and North of Aqua Ammonia storage tank and is void of vegetation.
Soil-3 TCL+30 VO DioXIN	10199828	1105-1120	B. Torpey	Collected at a depth of ONE to ONE and half feet. Described as Red clay with Black streaks. The area is South west of the Aqua Ammonia storage tanks, and has limited vegetation
Soil-4 TCL+30 VO	10199829	1107-1115	K. Kloo	Collected at five feet. Described as dark, with pieces of debris and a strong organic odor. Collected from an area west of the Aqua Ammonia tank near the fence line.
Soil-5 TCL+30 VO's DioXIN	10199830	1118-1125	C. Holstrom	Collected at Two and ONE half feet. Described as Black, oily, silty Soil with a possible organic odor. Collected from an area west of the Sewer collection Basin with limited vegetation.
Soil-7 TCL+30 VO's DioXIN	10199832	11:57-12:15	K. Kloo	Collected at a depth of four feet, Described as dark organic material, mixed with fine gray sand and debris with a strong organic odor. Sample was collected in an area of limited vegetation South of the Sewer collect. Basin.

SAMPLE TYPE/ NUMBER	BSA NUMBER	TIME COLLECTED	SAMPLERS	DESCRIPTION/LOCATION
Soil - 8 TCL+30 PHC VO's :	10199833 10199841	1205-1217	C. Holstrom	Collect at surface level from a mound. The area was void of vegetation, Sample is described as a dark sand with an oily substance in it. The sample was collected west of building #7.
Soil - 9 TCL+30 VO's	10199834	1201-1215	D. Maltese	Sample was collected at a depth of two feet in area void of vegetation. The top one foot was a red cla the second foot was black and sandy with building debris mixed in. Sample was collected. Sample was collected west of building #8
Soil - 10 TCL+30 VO's PHC	10199835 10199842	1225-1240	B. Torpey	Sample was collected at surface level. The soil was dark, and oily with amounts of gravel in it The sample had an organic odor.
Soil 11 Soil - 13 (Dup) TCL+30 VO's PHC	10199836 10199843 10199837	1225-1240	C. Holstrom	Samples were collected at a surface level in an a void of vegetation, on the south side of the site. The soil was dark and oily with gold flecks mixe in.

943390124

The seven EPA defined qualifiers to be used are as follows:

U - Indicates compound was analyzed for but not detected. The sample quantitation limit must be corrected for dilution and for percent moisture. For example, 10 U for phenol in water if the sample final volume is the protocol-specified final volume. If a 1 to 10 dilution of extract is necessary, the reported limit is 100 U. For a soil sample, the value must also be adjusted for percent moisture.

J - Indicates an estimated value. This flag is used either when estimating a concentration for tentatively identified compounds where a 1:1 response is assumed, or when the mass spectral data indicate the presence of a compound that meets the identification criteria but the result is less than the sample quantitation limit but greater than zero. For example, if the sample quantitation limit is 10 ug/L, but a concentration of 3 ug/L is calculated, report it as 3J. The sample quantitation limit must be adjusted for both dilution and percent moisture as discussed for the U flag, so that if a sample with 24% moisture and a 1 to 10 dilution factor has a calculated concentration of 300 ug/L and a sample quantitation limit of 430 ug/kg, report the concentration as 300J on Form I.

C - This flag applies to pesticide results where the identification has been confirmed by GC/MS. Single component pesticides $\geq$10 ng/ul in the final extract shall be confirmed by GC/MS.

B - This flag is used when the analyte is found in the associated blank as well as in the sample. It indicates possible/probable blank contamination and warns the data user to take appropriate action. This flag must be used for a TIC as well as for a positively identified TCL compound.

E - This flag identifies compounds whose concentrations exceed the calibration range of the GC/MS instrument for that specific analysis. This flag will not apply to pesticides/PCBs analyzed by GC/EC methods. If one or more compounds have a response greater than full scale, the sample or extract must be diluted and re-analyzed according to the specifications in Exhibit D. All such compounds with a response greater than full scale should have the concentration flagged with an "E" on the Form I for the original analysis. If the dilution of the extract causes any compounds identified in the first analysis to be below the calibration range in the second analysis, then the results of both analyses shall be reported on separate Forms I. The Form I for the diluted sample shall have the "DL" suffix appended to the sample number.

D - This flag identifies all compounds identified in an analysis at a secondary dilution factor. If a sample or extract is re-analyzed at a higher dilution factor, as in the "E" flag above, the "DL" suffix is appended to the sample number on the Form I for the diluted sample, and all concentration values reported on that Form I are flagged with the "D" flag.

A - This flag indicates that a TIC is a suspected aldol-condensation product.

Under the columns labeled "C", "Q", and "M", enter result qualifiers as identified below. If additional qualifiers are used, their explicit definitions must be included on the Cover Page in the Comments section.

FORM I-IN includes fields for three types of result qualifiers. These qualifiers must be completed as follows:

- C (Concentration) qualifier -- Enter "B" if the reported value was obtained from a reading that was less than the Contract Required Detection Limit (CRDL) but greater than or equal to the Instrument Detection Limit (IDL). If the analyte was analyzed for but not detected, a "U" must be entered.

- Q qualifier -- Specified entries and their meanings are as follows:

  E - The reported value is estimated because of the presence of interference. An explanatory note must be included under Comments on the Cover Page (if the problem applies to all samples) or on the specific FORM I-IN (if it is an isolated problem).

  M - Duplicate injection precision not met.

  N - Spiked sample recovery not within control limits.

  S - The reported value was determined by the Method of Standard Additions (MSA).

  W - Post-digestion spike for Furnace AA analysis is out of control limits (85-115%), while sample absorbance is less than 50% of spike absorbance. (See Exhibit E.)

  * - Duplicate analysis not within control limits.

  + - Correlation coefficient for the MSA is less than 0.995.

  Entering "S", "W", or "+" is mutually exclusive. No combination of these qualifiers can appear in the same field for an analyte.

- M (Method) qualifier -- Enter:

  - "P" for ICP
  - "A" for Flame AA
  - "F" for Furnace AA
  - "CV" for Manual Cold Vapor AA
  - "AV" for Automated Cold Vapor AA
  - "AS" for Semi-Automated Spectrophotometric
  - "C" for Manual Spectrophotometric
  - "T" for Titrimetric
  - "NR" if the analyte is not required to be analyzed.

A brief physical description of the sample, both before and after digestion, must be reported in the fields for color (before and after), clarity (before and after), texture and artifacts. For water samples, report color and clarity. For soil samples, report color, texture and artifacts.

TABLE-2

AnalytiKEM An American NuKEM Company

AnalytiKEM Inc.
28 Springdale Road
Cherry Hill, NJ 08003
609/751-1122
215/923-2068

TABLE-5

Analytical Data Report Package

for the

New Jersey Department of Environmental Protection

Division of Hazardous Waste Management

Trenton, New Jersey 08625

Field Sample #	Laboratory Sample #	Date of Collection
BSA 10199841 S-8	A20370-1	10/19/89
BSA 10199842 S-10	A20370-2	10/19/89
BSA 10199843 S-11	A20370-3	10/19/89

Laboratory Name AnalytiKEM, Inc.

Certification # NJ 04012

Supervisor/Manager Signature Michael Shmookler

Printed Name Michael Shmookler, Ph.D.

943390127

GENERAL ANALYSIS DATA SHEET

DEP SAMPLE NO.
BSA 10199841
S-8

Lab Name: AnalytiKEM

Lab Code: 04012 Case No. _____ Contract No.: X-195

Matrix: (soil/water) Solid Lab Sample ID: A20370-1

Sample wt/vol: 10.17 (g/mL) g Date Received: 10/19/89

% Moisture: not dec. 15 dec. _____ Date Analyzed: 10/28-11/1/89

Dilution Factor: 1:5

RESULTS

Parameter	Sample Concentration Units: ug/kg dw	Method Blank Units: ug/kg
Petroleum Hydrocarbons, by IR	270,000	20,000 U

GENERAL ANALYSIS DATA SHEET

DEP SAMPLE NO.
BSA 10199842
S-10

Lab Name: AnalytiKEM

Lab Code: 04012 Case No. _____ Contract No.: X-195

Matrix: (soil/water) Solid Lab Sample ID: A20370-2

Sample wt/vol: 10.12 (g/mL) g Date Received: 10/19/89

% Moisture: not dec. 23 dec. _____ Date Analyzed: 10/28-11/1/89

Dilution Factor: 1:50

RESULTS

Parameter	Sample Concentration Units: ug/kg dw	Method Blank Units: ug/kg
Petroleum Hydrocarbons, by IR	4,800,000	20,000 U

GENERAL ANALYSIS DATA SHEET

DEP SAMPLE NO.
BSA 10199843
S-11

Lab Name: AnalytiKEM

Lab Code: 04012 Case No. _____ Contract No.: X-195

Matrix: (soil/water) Solid Lab Sample ID: A20370-3

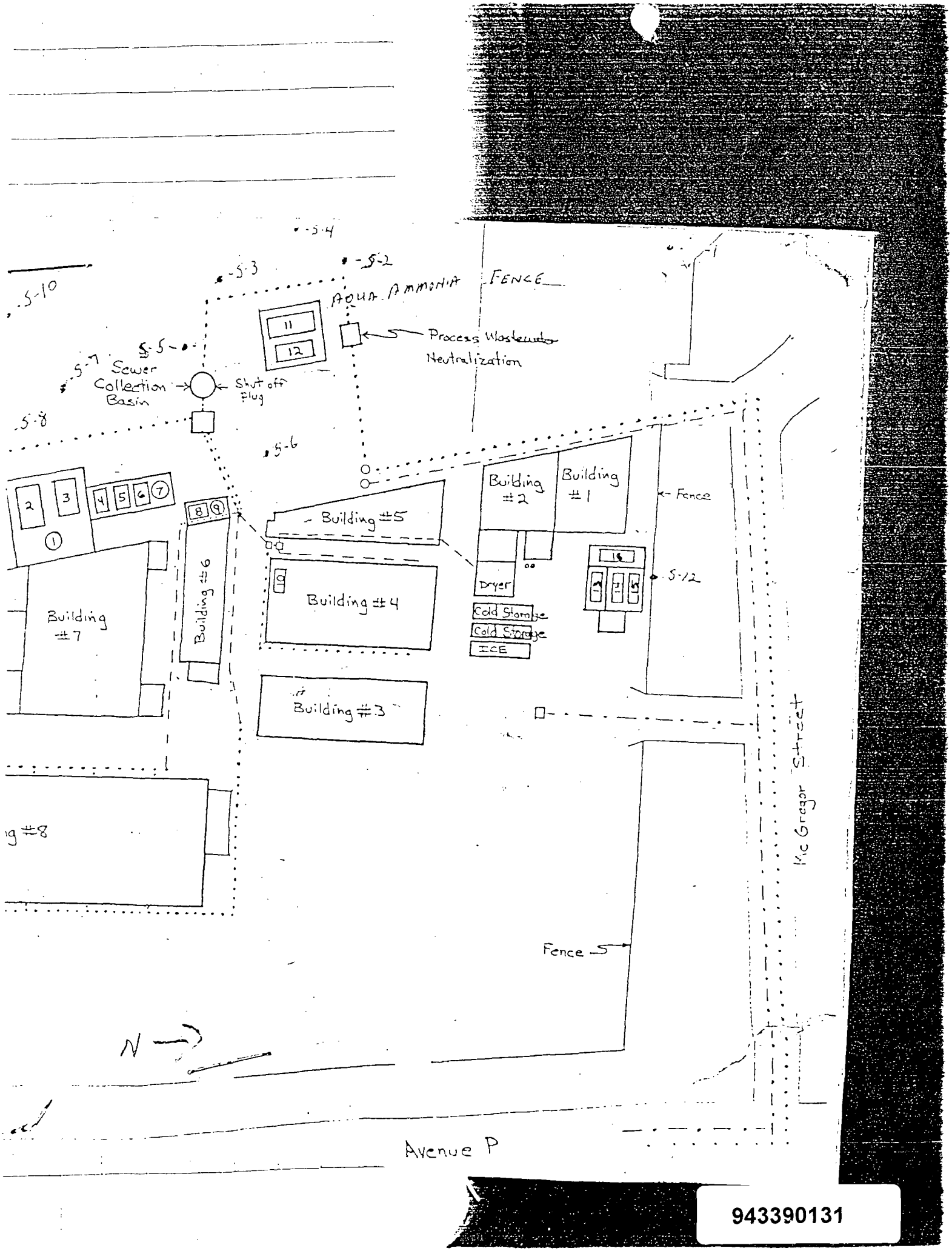
Sample wt/vol: 10.75 (g/mL) g Date Received: 10/19/89

% Moisture: not dec. 10 dec. _____ Date Analyzed: 10/28-11/1/89

Dilution Factor: 1:400

RESULTS

Parameter	Sample Concentration Units: ug/kg dw	Method Blank Units: ug/kg
Petroleum Hydrocarbons, by IR	100,000,000	20,000 U


S-4
S-3
S-2
S-1
S-10
S-5
S-7
S-8
S-6
S-12
AQUA AMMONIA
FENCE
Process Wastewater
Neutralization
Sewer
Collection
Basin
Shut off
Plug
11
12
2
3
4
5
6
7
1
8
9
Building #7
Building #6
Building #5
Building #4
Building #3
Building #2
Building #1
Fence
10
13
14
15
Dryer
Cold Storage
Cold Storage
ICE
Mc Gregor Street
Fence
N
Avenue P

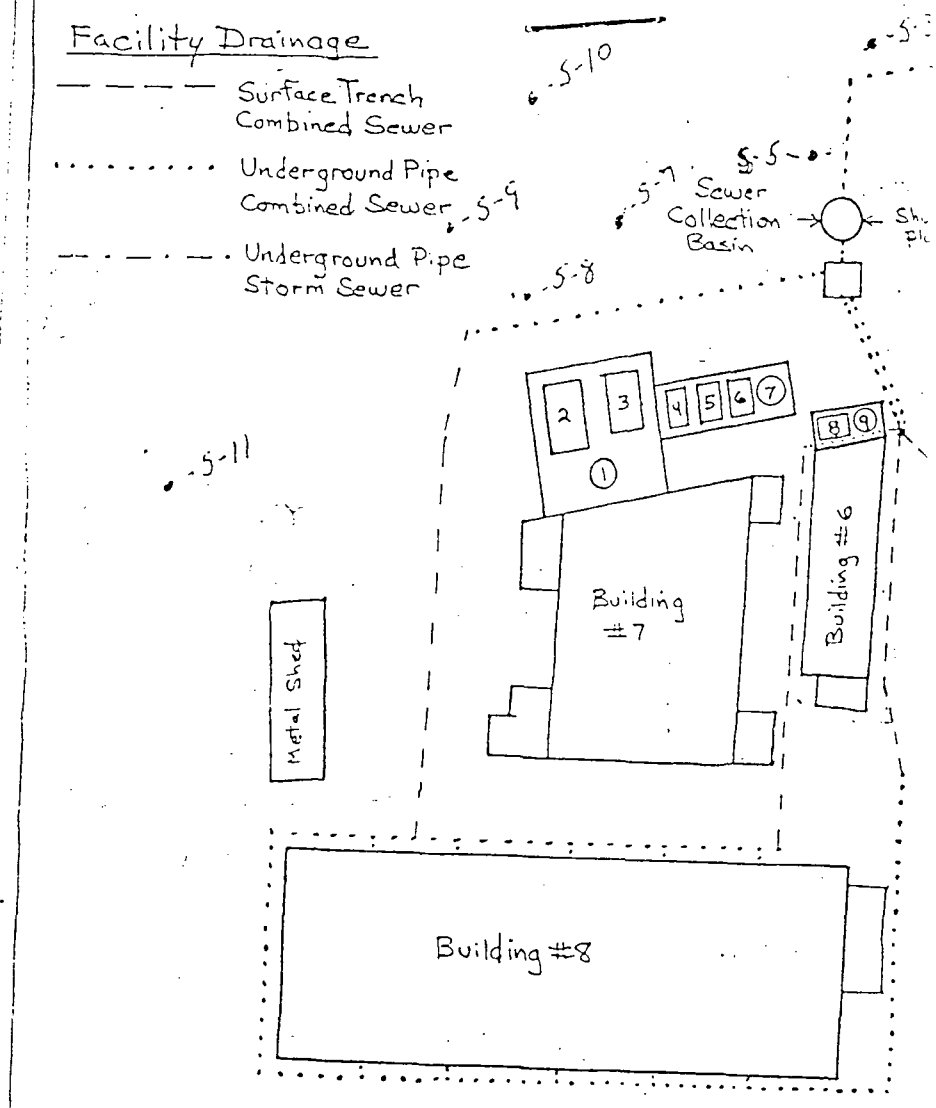
943390131

Facility Drainage

Surface Trench Combined Sewer

Underground Pipe Combined Sewer

Underground Pipe Storm Sewer



S-2, S-3, S-5, S-6 & S-7 To be Drawn Samples

Allianz Chemical

943390133

PHASE II DIOXIN SITE INVESTIGATION
FINAL REPORT

FOR

ALLIANCE COLOR AND CHEMICAL CO.
DIVISION OF PFISTER CHEMICAL CO.
NEWARK, NEW JERSEY

Submitted To

New Jersey Department of Environmental Protection
Division of Waste Management
Hazardous Site Mitigation Administration
428 East State Street
Trenton, New Jersey 08625

By

E.C. Jordan Co.
P.O. Box 7050, DTS
Portland, Maine 04112

December 1985

TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

ALLIANCE COLOR AND CHEMICAL CO.
DIVISION OF PFISTER CHEMICAL CO.
NEWARK, NEW JERSEY

1.0 BACKGROUND

1.1 Project Description

The New Jersey Department of Environmental Protection (NJDEP), in cooperation with the U.S. Environmental Protection Agency (EPA), is responsible for the identification and assessment of potential dioxin contamination in the State of New Jersey. During Phase I of the Dioxin Site Investigation Program, the NJDEP collected and analyzed soil samples from nine sites where compounds known to be associated with dioxin were produced. As part of Phase II of the program, soil and sediment samples from an additional 23 sites selected by the NJDEP were analyzed for dioxin contamination.

This report summarizes the Phase II dioxin investigation of the Alliance Color and Chemical Co. (Alliance) in Newark, NJ conducted by E.C. Jordan under contract to the NJDEP. The investigation consisted of five major tasks: (1) file review; (2) site reconnaissance; (3) sample collection; (4) sample analysis; and (5) report preparation.

Records on file at the following offices of the NJDEP were examined during the file review:

- Division of Waste Management, Hazardous Site Mitigation Administration, Trenton (HSMA);
- Division of Waste Management, Bureau of Field Operations, Parsippany-Troy and Yardville (DWM);
- Office of Science and Research, Industrial Investigation Unit, Trenton (OSR); and
- Division of Water Resources, Trenton (DWR).

Records on file at EPA's Region II Office in Edison, NJ were also reviewed.

During the site reconnaissance, site personnel were interviewed to confirm file information. Sample locations were selected based on the site use history and observations made during the reconnaissance. The sample location selection process was designed to include those areas with the greatest potential for dioxin contamination. Because of the low mobility of dioxin in soils, most samples were collected within the surficial soil stratum (0 to 6 inches). Samples were delivered to the Environmental Testing and Certification Corporation (ETC) in Edison, NJ for analysis of dioxins, in particular the chlorinated dioxin isomer, 2,3,7,8-tetrachlorodibenzo-p-dioxin (2,3,7,8-TCDD).

1.2 Site Location

Alliance Color and Chemical Co.
Division of Pfister Chemical Co.
309-327 Avenue P
Newark, New Jersey 07105

Essex County
Latitude 40°44'26" Longitude 74°07'52"

Newark is located in northeastern New Jersey. The site is east of downtown Newark, near Exit 15E of the New Jersey Turnpike (Figure 1).

1.3 Site Topography and Layout

The Alliance plant is on the broad floodplain formed where the Passaic River flows into Newark Bay. The site is nearly flat with an elevation of between 5 and 10 feet above mean sea level (Figure 1).

The Alliance site is in a heavily industrialized section of Newark. The closest residential neighborhood begins approximately three-quarters of a mile west of the site.

Figure 2 depicts the layout of the 8.4-acre Alliance site.

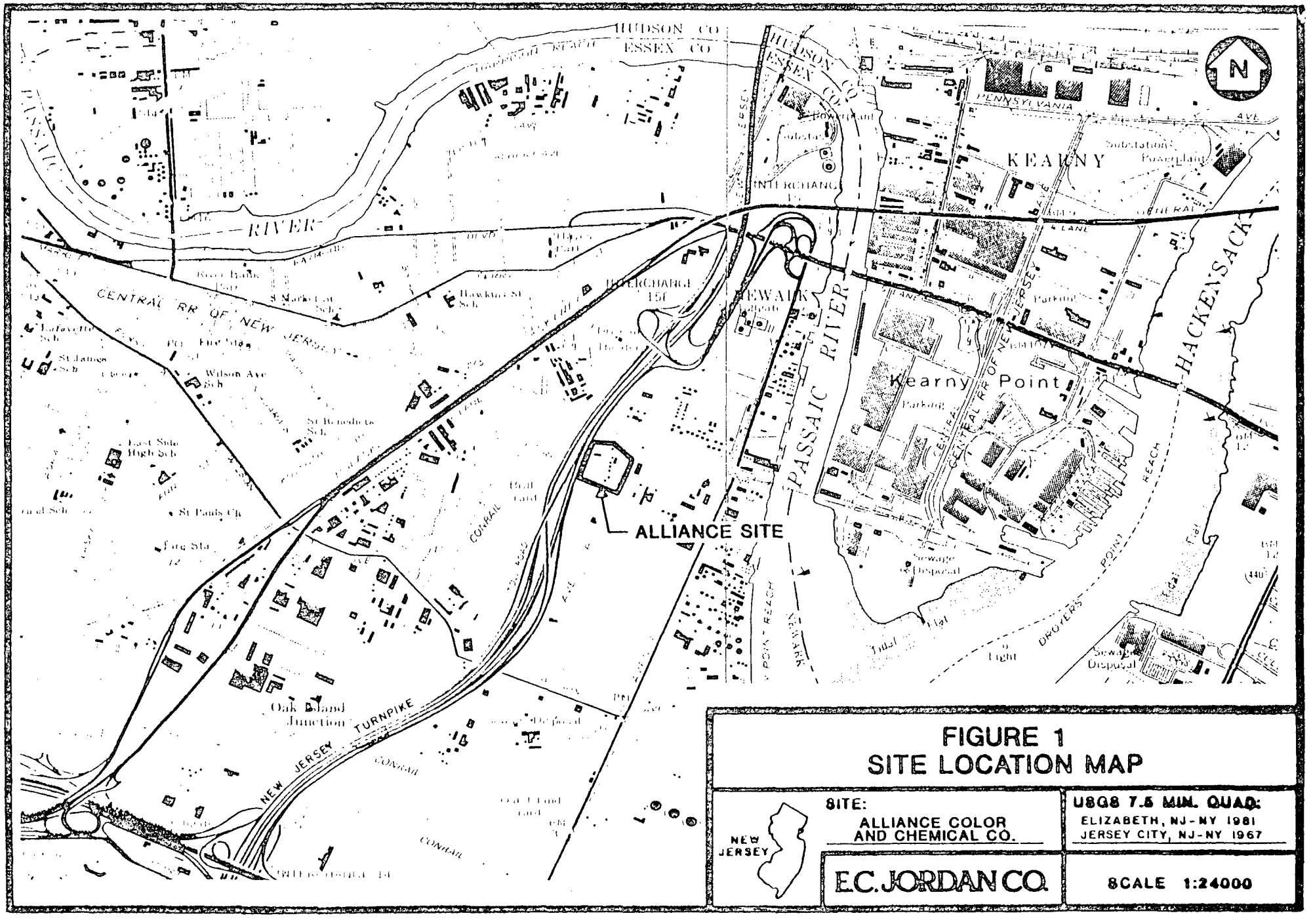


FIGURE 1
SITE LOCATION MAP

NEW JERSEY

SITE:
ALLIANCE COLOR AND CHEMICAL CO.

USGS 7.5 MIN. QUAD:
ELIZABETH, NJ-NY 1981
JERSEY CITY, NJ-NY 1967

E.C. JORDAN CO.

SCALE 1:24000

943390139

NEW JERSEY

943390140

BASE MAP SOURCE: PROPERTY BOUNDARY AND BUILDING LOCATIONS ARE BASED ON A SITE PLAN DATED APRIL 15, 1980, SUPPLIED BY ALLIANCE COLOR AND CHEMICAL CO. (METES AND BOUND SURVEY).

NEW JERSEY DEPARTMENT OF ENVIRONMENTAL PROTECTION

4670-03 JUNE 1985

FIGURE 2
SITE PLAN

SITE:

ALLIANCE COLOR AND CHEMICAL CO.

E.C. JORDAN CO.

0 120 FEET

1.4 Environmental Setting

The Passaic River is approximately one-half mile east of the Alliance site. There are no drainage channels between the site and the river. Storm-water runoff from the site appears to collect in a depression just over the northern site boundary.

There are no production wells or monitoring wells at the Alliance site (8). Consequently, no information on the depth to groundwater at the site was available. Judging from the topography of the area, the water table gradient appears to be easterly towards the Passaic River.

1.5 Site Use History

The western half of the Alliance site has reportedly been occupied since 1945 (2,6). The first known occupant was the Sun Chemical Co. (specific dates unknown). Sun sold the property to the Alliance Color and Chemical Co. and in 1966, Pfister Chemical purchased the site, retaining the Alliance name (8).

Alliance purchased the vacant lot on the east side of the original property circa 1980. The northern half of the lot was used as a junkyard in the 1970's but has since been cleared and graded. Alliance is in the process of completing construction of a large warehouse on the lot (Figure 2) (8).

According to an OSR site inspection report dated August 3, 1983, Alliance manufactures organic chemicals, specifically dye and pigment intermediates and diazo compounds. Chemicals used as raw materials by Alliance include para-dichlorobenzene, aniline, acetic anhydride, and beta-naphthol (6). A Preliminary Assessment form in the HSMA files from March 1984 lists the following hazardous substances generated at the plant: 1,2,4-trichlorobenzene, zinc, copper, benzene, ethylbenzene, xylene, dichloroethane, carbon tetrachloride,

trimethyl benzene, naphthalene, methylene chloride, toluene, monomethylnaphthalenes, chloroform, 1,1,1-trichloroethane, and polychlorinated biphenyls.

The NJDEP reported that in the past, industrial wastewaters were transported to a pretreatment lagoon via an unlined trench (2). The approximate location of the lagoon is depicted in Figure 2. Neither the lagoon nor the trench were observed during the site reconnaissance and Alliance personnel stated that they never existed (8). Wastewater was and still is neutralized before discharge to the Passaic Valley Sewer Authority (2,8).

A report in the DWM files describes an explosion which occurred at the Alliance site on January 7, 1980 (3). A three story building containing reaction vessels and chemicals was completely destroyed in the fire (Figure 2). An NJDEP inspector observed on January 10, 1980 that most of the 55-gallon drums and reactor vessels were still intact after the incident (3). A new production building now stands on the explosion site (8).

2.0 POTENTIAL DIOXIN CONTAMINATION

2.1 Use, Production, or Disposal of Dioxin-Associated Chemicals

The chemicals 2-chloro-1,4-diethoxy-5-nitrobenzene (DEB) and 5-chloro-2,4-dimethoxyaniline (ITR-amine) were formerly manufactured at the Alliance Chemical plant (1,6). Mr. Gusmano (Technical Director) estimates that 10,000 pounds per year of DEB were produced from 1975 to 1980 and 20,000 pounds per year of ITR-amine were produced from 1965 until 1983 (8). These two chemicals are listed in the EPA report "Dioxins" as Class II organic compounds. Class I and II compounds are those organics most likely to be associated with the formation of dioxins (1).

Alliance used 1,2,4-trichlorobenzene as a starting material in the manufacture of DEB (8). The June 1980 Selected Substances Report for Alliance shows that 38,350 pounds per year were used, presumably from 1975 to 1980 (6). The compound 1,2,4-trichlorobenzene is listed as a Class III compound. Class III compounds are slightly less likely to be associated with dioxin formation than Class I or II compounds (1).

2.2 Storage and Handling Methods

The Class II dioxin chemicals (2-chloro-1,4-diethoxy-5-nitrobenzene and 5-chloro-2,4-dimethoxy aniline) were reportedly manufactured in 750-gallon steel kettles or 2500-gallon open tanks (2,6). The future production of these chemicals at this site depends on customer demand (6,8).

The estimated quantities of 1,2,4-trichlorobenzene released into the environment each year as reported in the 1980 Selected Substances Report were 100 pounds in stack emissions, 100 pounds of fugitive emissions, and 50 pounds of POTW discharge (6).

2.3 Past Sampling Efforts

There were no records in the NJDEP or EPA files reviewed which indicated previous soil, groundwater, or surface water sampling at the Alliance site specifically for dioxin analysis.

3.0 SITE RECONNAISSANCE AND RATIONALE FOR SAMPLING LOCATIONS

3.1 Summary of Site Reconnaissance

On March 19, 1985, E.C. Jordan Co. personnel (C. Moore and W. Britton) and NJDEP representatives (A. DeCicco and R. Tuccillo) met with the Technical

Director (A. Gusmano) and the Plant Manager (W. Henning) of the Alliance Color and Chemical Co. in Newark, NJ. The meeting consisted of a tour of the facility followed by an interview during which site use history and production practices were discussed.

Using the information obtained during the file search, in association with those observations made during the site visit, five sample areas have been identified. These areas, shown in Figure 2, are:

- o previous junk yard area;
- o former lagoon and wastewater ditch area;
- o sewer access area on the western side of the site;
- o stormwater collection area near the northern site boundary; and
- o along the western property line at potential drainage points.

3.2 Rationale for Sampling Locations

As noted above, there was an explosion in 1980 which destroyed the building that was used for the production of DEB. Since this building was near the old junk yard area, it is probable that some materials were deposited in that area at the time of the explosion (particulate matter, etc.). However, the surface of this portion of the site has been graded, thus any samples should be collected at 1 to 2 feet below existing grade.

According to information supplied by the NJDEP, a wastewater ditch and lagoon used to exist at this site. The approximate locations of the ditch and lagoon were provided by an NJDEP representative. These areas are prime sampling points. Likewise, the area where wastewater from the production processes is currently collected for discharge to the city sewer also serves as

a good sample location. If the wastewater overflowed during periods of high water use or sewer backups, it would likely collect in this area.

There are no storm drains on this site. Surface runoff from the site appears to collect in a topographic low area located just north of the property. Because the surface area adjacent to the production buildings is paved, any spills or surface discharges would probably be carried off in surface runoff. Thus, the low area which collects runoff should be included as a sampling point for this site.

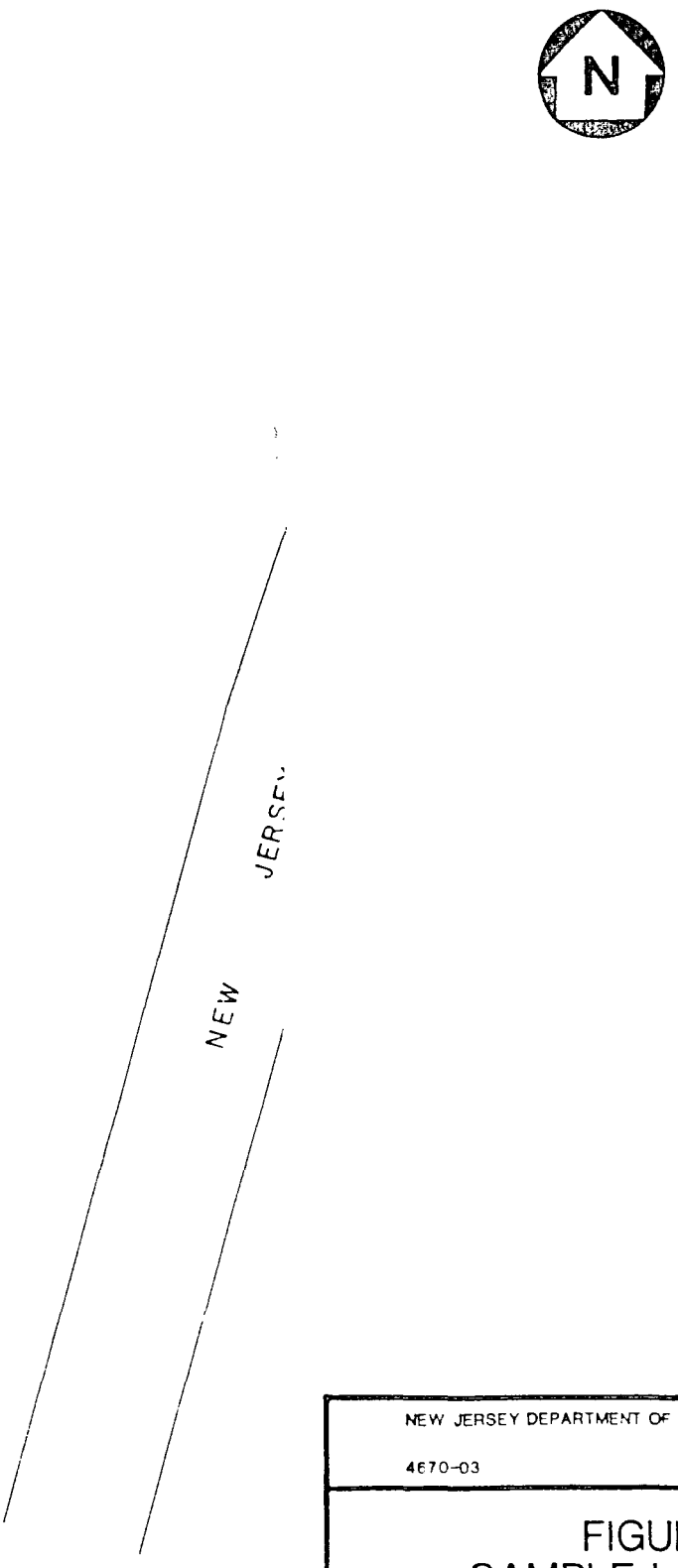
Based on discussions with the NJDEP staff, it was agreed that 10 soil samples (not counting duplicates or field blanks) would be collected at this site. A site sampling plan, which identified the sample locations, is included as Appendix A of this report. Appendix B contains the site specific health and safety plan.

4.0 SAMPLE COLLECTION AND ANALYSIS

4.1 Summary of Sampling Episode

On May 10, 1985, E.C. Jordan Co. personnel (C. Moore and R. Burger) collected seven surface soil samples (including one duplicate) and two subsurface soil samples at the Alliance site for analysis of 2,3,7,8-TCDD. A representative of the NJDEP (W. Mennel) was present during the sampling. The sampling locations are shown in Figure 3. Samples were split at the request of the site owners. Appendix C contains a copy of the field data sheets. Slides of the sample sites are included in Appendix D.

The samples were collected in accordance with the sampling plan (Appendix A) with the following exceptions. At sample location 2, impenetrable debris was encountered at a depth of about one foot which prevented the collection of



NEW JERSEY DEPARTMENT OF ENVIRONMENTAL PROTECTION

4670-03 JUNE 1985

FIGURE 3
SAMPLE LOCATIONS AND ANALYTICAL RESULTS

SITE

ALLIANCE COLOR AND CHEMICAL CO.

E.C. JORDAN CO.

943390146

BASE MAP SOURCE: PROPERTY BOUNDARY AND BUILDING LOCATIONS ARE BASED ON A SITE PLAN DATED APRIL 15, 1980, SUPPLIED BY ALLIANCE COLOR AND CHEMICAL CO. (METES AND BOUND SURVEY).

a deeper sample. Spoons were used to take samples at both 16-1 and 16-2 after the holes were dug with shovels. A spoon and screen were used to collect Sample 16-3 because the soil had a high gravel content. Samples 16-5 and 16-6 were deleted after attempts to dig through the debris used as fill proved futile. Samples 16-7, 16-8, and 16-9 were moved from the proposed locations to low areas which appeared to capture a greater portion of the site drainage. A spoon was used for Samples 16-8 and 16-9 because the soil surface was too hard to be collected with a tulip bulb planter.

4.2 Summary of Results

The method employed for the analysis of soil and sediment samples for 2,3,7,8-TCDD was the EPA September 1983 statement of work, "Dioxin Analysis, Soil/Sediment Matrix Multi-Concentration using Selected Ion Monitoring (SIM) GC/MS Analysis with Jar Extraction Procedure." According to ETC, the accuracy of the analysis is directly dependent on the accuracy of the native TCDD stock solution. ETC uses the certified standard from EPA as the primary standard to calculate the values in the sample.

The results of the 2,3,7,8-TCDD analysis by ETC for Alliance are shown in Table 1 and Figure 3. Data validation was performed by NJDEP. No 2,3,7,8-TCDD was detected in any of nine surface and subsurface soil samples analyzed.

A duplicate sample was taken at sample location 8. The soil collected at this location was thoroughly mixed and then poured alternately into two sample bottles which were then sealed and submitted to the laboratory as a check on the consistency of the laboratory analysis. The results of Samples 16-8 and 16-9 were consistent. Both had no detectable 2,3,7,8-TCDD with detection limits of 0.05 ppb and 0.04 ppb, respectively.

TABLE 1

RESULTS OF 2,3,7,8-TCDD ANALYSIS
ALLIANCE COLOR AND CHEMICAL, INC.

Sample Collection Date: May 10, 1985
Sample Analysis Date(s): May 26, 1985
Laboratory: Environmental Testing and Certification Corporation, Edison, New Jersey

Sample Number	Figure 3 Reference	2,3,7,8-TCDD (ppb[1]) Measured	DL[2]	Sample Type
16-1	1	ND[3]	0.20	Subsurface soil
16-2	2	ND	0.04	Subsurface soil
16-3	3	ND	0.32	Surface soil
16-4	4	ND	0.21	Surface soil
16-7	7	ND	0.07	Surface soil
16-8	8	ND	0.05	Surface soil
16-9	9	ND	0.04	Duplicate of 16-8
16-10	None	ND	0.05	Field/equipment blank
16-11	11	ND	0.10	Surface soil
16-12	12	ND	0.07	Surface soil

[1] ppb - Parts per billion, i.e., µg/kg of soil or sediment on an "as is" basis.
[2] DL - Method detection limit which is the concentration at which there is a 99 percent confidence level that the compound is present.
[3] ND - Not detected.

A combined field/equipment blank was also submitted to the laboratory for analysis. The blank consisted of analyte-free soil supplied by the NJDEP which was poured through a tulip bulb planter into a foil pan and then into an empty sample bottle at the site. The bottle was then sealed and submitted to the laboratory as a check on possible contamination from the sample site, sampling equipment, or sample containers. No 2,3,7,8-TCDD was detected in the field/ equipment blank (Sample 16-10).

4.3 Assessment of the Need for Further Dioxin Sampling

The analytical results show that 2,3,7,8-TCDD was not detected at any of the eight surface and subsurface soil locations sampled. However, two prime samples from the former wastewater ditch (Sample 6-5) and the lagoon (Sample 6-6) were unobtainable due to the condition of the fill. It is therefore recommended that future investigations at the Alliance site include sampling and analysis for 2,3,7,8-TCDD at these two locations.

REFERENCES

1. Esposito, M.P., T.O. Tiernan, and F.E. Dryden, 1980. Dioxins. U.S. EPA 600/2-80-197, Cincinnati, OH.

2. Records on file as of January 31, 1985, NJDEP - Division of Waste Management, Hazardous Site Mitigation Administration, 428 East State Street, Trenton, NJ 08625.

3. Records on file as of January 31, 1985, NJDEP - Division of Waste Management, Bureau of Field Operations, 120 Route 156, Yardville, NJ 08620.

4. Records on file as of January 31, 1985, NJDEP - Division of Waste Management, Bureau of Field Operations, 1259 Route 46E, Parsippany-Troy Hills, NJ.

5. Records on file as of January 31, 1985, NJDEP - Division of Water Resources, 1174 Prospect Street, Trenton, NJ.

6. Records on file as of January 31, 1985, NJDEP - Office of Science and Research, Industrial Investigation Unit, 436 East State Street, Trenton, NJ.

7. Records on file as of January 31, 1985, U.S. EPA - Region II Office, Woodbridge Avenue, Edison, NJ.

8. Interview on March 19, 1985 with Arthur F. Gusmano, Technical Director and William Henning, Plant Manager of Alliance Color and Chemical in Newark, NJ.

APPENDIX A

Site Sampling Plan

SITE SAMPLING PLAN

Client: NJDEP Project: Dioxin Investigation

Team Leader: C. Moore or W. Britton Team Members: C. Goodwin or R. Burger

SITE INFORMATION

Site Name: Alliance Color & Chemical Co. Street: 309-327 Avenue P

City: Newark County: Essex State: N.J.

Site Owner: Pfister Chemical Inc. Phone No: Unknown

Address: same as above

Date(s) of site activity: Week of April 29 or May 6, 1985

Sampling Objectives: To assess whether or not 2,3,7,8-TCDD is present at the action level of 1 ppb.

Site Map Attached: Yes x No ___ Site Active: x Yes ___ No

METHODOLOGY

All sample collection, sample preservation, and associated quality assurance procedures used during this investigation will be in accordance with the standard operating procedures as specified in the Quality Assurance Project Management Plan (QAPMP) prepared for the State of New Jersey, Department of Environmental Protection for the Dioxin Site Investigation Program. All chain-of-custody and corresponding quality assurance procedures used during this investigation will be in accordance with standard procedures and protocols as specified by the State of New Jersey Department of Environmental Protection.

SITE SAMPLING PLAN

Site Name: Alliance Color and Chemical

Sampling Requirements

Samples:	Surface Soil	6	Subsurface Soil	2	Sediment	0	Other	2
Duplicates:	Surface Soil	1	Subsurface Soil	0	Sediment	0	Other	0
Blanks:	Surface Soil	1	Subsurface Soil	0	Sediment	0	Other	0
Total:	Surface Soil	8	Subsurface Soil	2	Sediment	0	Other	2

Sampling Procedures

Surface Soil: As specified in the generic QAPMP and on page A-3.

Subsurface Soil: Specific sampling procedures are included as page A-4.

Sediment: Not applicable.

Other: Specific sampling procedures using a bucket auger are included as page A-5.

SOIL SAMPLING WITH A SPOON OR TROWEL

1. Check all sampling equipment for cleanliness. Spoons, trowels, and screens should be precleaned using the cleaning procedure outlined for tulip bulb planters prior to use at any site. Field decontamination is not required because new equipment will be used between sample points at the same site.

2. Clean the surface area to be sampled of any debris (twigs, litter, large stones, etc.).

3. If the soil is too stony for the use of a tulip bulb planter, a large precleaned stainless steel spoon or trowel will be used to extract the soil sample.

4. If the soil is very gravelly or stony (such as in the ballast area of a rail siding) a precleaned screen may be used to segregate the finer materials.

5. Place the soil removed from the sample point into a clean, unused, disposable aluminum foil pan. When using a screen, place the screen over the pan and spoon the soil materials onto the screen. Repeat the process in adjacent portions of the cleared area until there is sufficient soil to fill a 1-quart sample jar approximately 3/4 full.

6. Using a stainless steel spoon, mix the soil thoroughly and place it into the sample jar after which the jar should be sealed.

SUBSURFACE SOIL SAMPLING WITH A SPADE AND TULIP BULB PLANTER

1. Check all sampling equipment for cleanliness. The spades and tulip bulb planters should be decontaminated prior to use at any site. Field decontamination is not required because new equipment will be used between sample points at the same site.

2. Clear a one-square foot area to be sampled of any surface debris (twigs, rocks, litter, etc.).

3. Carefully remove the top layer of soil to the desired sample depth with a precleaned garden spade.

4. Insert a precleaned tulip bulb planter into the exposed soil surface to a depth of 4.5 to 5.0 inches. When doing this the soil will extend approximately one-half inch or more above the sides of the tulip bulb planter.

5. Place the soil from the tulip bulb planter into a clean, unused, disposable aluminum foil pan. Repeat the process with the tulip bulb planter in adjacent portions of the cleared area until there is sufficient soil to fill a 1-quart sample jar approximately 3/4 full.

6. Using a precleaned stainless steel spoon, mix the soil thoroughly and place it in the sample jar after which the jar should be sealed.

7. Place the soil which has been removed with the spade back into the excavation.

SUBSURFACE SOIL SAMPLING WITH A HAND HELD TWIST AUGER OR BUCKET AUGER

1. Clear a one-square foot area to be sampled of any surface debris (twigs, rocks, litter, etc.). It may be advisable to remove any turf present for an area of approximately four inches in diameter around each drilling location.

2. Begin drilling, using a precleaned twist or bucket auger, periodically removing accumulated soils from around the borings. This prevents accidentally brushing loose material back down the borehole when removing the auger. The soil auger should be decontaminated prior to its use at any site and between sampling points on the same site.

3. After reaching desired depth, slowly and carefully remove auger from the borehole.

4. Place the core into a clean, unused, disposable aluminum pan. Repeat the process as often as necessary to obtain sufficient soil to fill a 1-quart sample jar approximately 3/4 full.

5. Using a stainless steel spoon, mix the soil thoroughly and place it in the sample jar after which the jar should be sealed.

6. Place all excess soil back into the borehole. If this is a lawn area place additional soil (potting soil) into the borehole to fill it to the surface and put turf back in place.

DECONTAMINATION PROCEDURES

The decontamination procedures to be used in the field are the same as those followed when initially cleaning the auger prior to its being shipped to the field. These cleaning procedures are as follows:

1. Wash thoroughly with distilled water.

2. Rinse with deionized water.

3. Rinse with pesticide-grade acetone.

4. Rinse with pesticide-grade hexane.

5. Allow to air dry.

6. Place auger in plastic bag prior to storing or moving between sample points.

SITE SAMPLING PLAN

Site Name: Alliance Color & Chemical Site Number: 16

Sample ID	Map Reference	Sample Location	Justification
16-1	1	Old Junk Yard	Nearest soil area to the former DEB production building. Fall-out at the time of the explosion could have accumulated here. Sample to be taken at the 1-foot depth because the surface soil has been disturbed by grading.
16-2	2	Old Junk Yard	Same as for Sample 16-1 except farther away from the former DEB production site. Sample to be collected between 1.5 and 2 feet below existing grade in an effort to reach undisturbed soil.
16-3	3	Sewer Access Point	Any overflow of process wastewater would move through this area.
16-4	4	Western Side of Site	Runoff from the production area could flow through this area during heavy rainfall.
16-5	5	Former Wastewater Ditch	Process wastewater was originally directed through this area. Sample to be collected using a soil auger.
16-6	6	Former Lagoon Area	Process wastewater was collected in this area prior to the site connecting up to the public sewer. Sample will be collected using a soil auger.
16-7	7	Western Side of Site	Overflow or drainage from the old lagoon and waste ditch could have flowed through this area, especially during periods of high groundwater.

SITE SAMPLING PLAN

Site Name: Alliance Color & Chemical Site Number: 16

Sample ID	Map Reference	Sample Location	Justification
16-8	8	Western Side of Site	This area would be in the path of runoff from the rear of the property. If any materials had been deposited on the ground at the rear of the property this point should pick up the runoff.
16-9	9	Western Side of Site	Duplicate of Sample 16-8.
16-10	None	Field Blank	Sample to be provided by NJDEP.
16-11	11	Surface Runoff Collection Area	Since the site is essentially all paved most of the surface runoff collects in a topographic low point north of the plant site.
16-12	12	Surface Runoff Collection Area	Same as for Sample 16-11 except at the opposite end of the low area.

NEW JERSEY TURNP...

PROPOSED SAMPLING LOCATION PLAN

SITE:

ALLIANCE COLOR AND CHEMICAL CO.

E.C. JORDAN CO.

943390159

APPENDIX B

Site Specific Health and Safety Plan

SITE INVESTIGATION TEAM
SITE SAFETY PLAN

A. GENERAL INFORMATION

SITE: Alliance Color and Chemical Co.

LOCATION: 309-327 Avenue P, Newark, NJ

PLANS PREPARED BY: C. Moore, W. Britton DATE: April 19, 1985

APPROVED BY: Robert A Steeves DATE: 19 April 85

OBJECTIVE(S): To insure protection of personnel during collection of samples for dioxin analysis.

PROPOSED DATE OF INVESTIGATION: Week of April 29 or May 6, 1985

BACKGROUND REVIEW: Complete: x Preliminary: _____

SUMMARY OF HAZARD EVALUATION: OVERALL HAZARD: Serious: _____ Moderate: _____

Low: x Unknown: _____

Surface soil samples and soil boring samples will be collected.

B. SITE CHARACTERISTICS

FACILITY DESCRIPTION: Alliance manufactures organic chemicals, specifically dye and pigment intermediates and diazo compounds.

Unusual Features (dike integrity, power lines, terrain, etc.) None

Status: (active, inactive, unknown) Active

History: (Worker or non-worker injury; complaints from public; previous agency action): There was an explosion in January 1980 which destroyed a three-story building.

C. SITE SAFETY WORK PLAN

Team Member	Responsibility
W. Britton or C. Moore	Site Safety Manager
R. Burger or C. Goodwin	Sampler

PERIMETER ESTABLISHMENT: Map/Sketch Attached Yes Site Secured? No

Perimeter Identified? Yes Zone(s) of Contamination Identified? No

PERSONAL PROTECTION

Level of Protection: A ____ B ____ C x D ____

Modifications: Respirators will be worn (1) during sample collection and handling, (2) whenever PI meter readings warrant them, (3) whenever windy or dusty conditions prevail.

Surveillance Equipment and Materials: Photoionization meter (PI meter)

DECONTAMINATION PROCEDURES: Personnel will dispose of protective clothing at completion of sampling and will shower as soon as possible after leaving the site. Soil augers, spades, sample bottles, surveillance equipment, respirators, and cameras will be wiped with clean cloths before leaving the site.

SITE ENTRY PROCEDURES: Access obtained by the NJDEP

WORK LIMITATIONS (Time of day, etc.): Daylight only

INVESTIGATIONS-DERIVED MATERIAL DISPOSAL: Tulip bulb planters, foil pans, foil, protective clothing, and wiping cloths will be put in double plastic bags and turned over to the NJDEP for disposal. Non-disposable equipment (e.g.,spoons) will be double-bagged and held by E. C. Jordan for later decontamination.

D. EMERGENCY INFORMATION

LOCAL RESOURCES

Ambulance 389-3795

Hospital Emergency Room 589-1300

Poison Control Center (800) 962-1253

Police 733-6000

Fire Department 733-7400

Airport Newark

SITE RESOURCES

Water Supply Yes

Telephone Yes

Radio N/A

Other

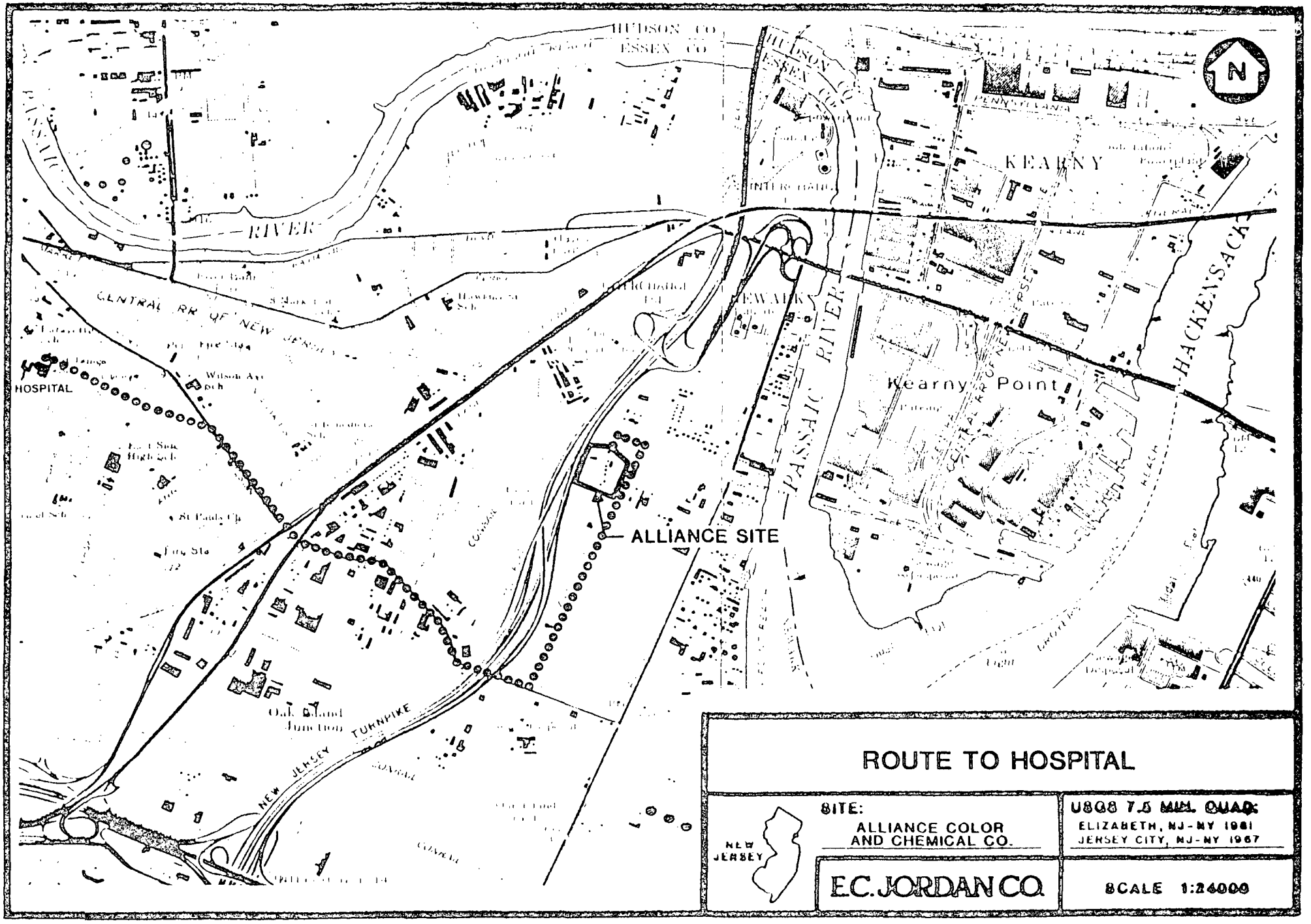
EMERGENCY CONTACTS

1. Dr. Frank Lawrence . . . . . .(207) 871-2617
2. Bruce Campbell, RPh. . . . . .(207) 871-2449
3. Maine Poison Control Center. . . . . .(207) 871-2950
4. E.C. Jordan (Maine). . . . . .(207) 775-5401
5. E.C. Jordan (Florida). . . . . .(904) 656-1293
6. E.C. Jordan (Detroit). . . . . .(313) 569-3955
7. Envirologic Data . . . . . .(207) 773-3020
8. Robert Predale, NJDEP . . . . . .(609) 633-6801

F. EMERGENCY ROUTES

(Give road or other directions; attach map)

HOSPITAL: Turn right onto Avenue P and right again onto Wilson Ave. After approximately 2 miles, turn left onto Jefferson St. The St. James Hospital is straight ahead. (See attached map.)



ROUTE TO HOSPITAL

NEW JERSEY

SITE:
ALLIANCE COLOR AND CHEMICAL CO.

USGS 7.5 MIN. QUAD:
ELIZABETH, NJ-NY 1981
JERSEY CITY, NJ-NY 1967

E.C. JORDAN CO.

SCALE 1:24000

943390164

APPENDIX C

Field Data Sheets

E.C.JORDAN CO. 4670-04 Dioxin Site Investigation - New Jersey Dept. of Env. Prot.

Site Alliance (Alliance Color & Chem) Date 5/10/95 Page 1 of 4

Samplers C. Moore, R. Burger Weather Sunny, hot

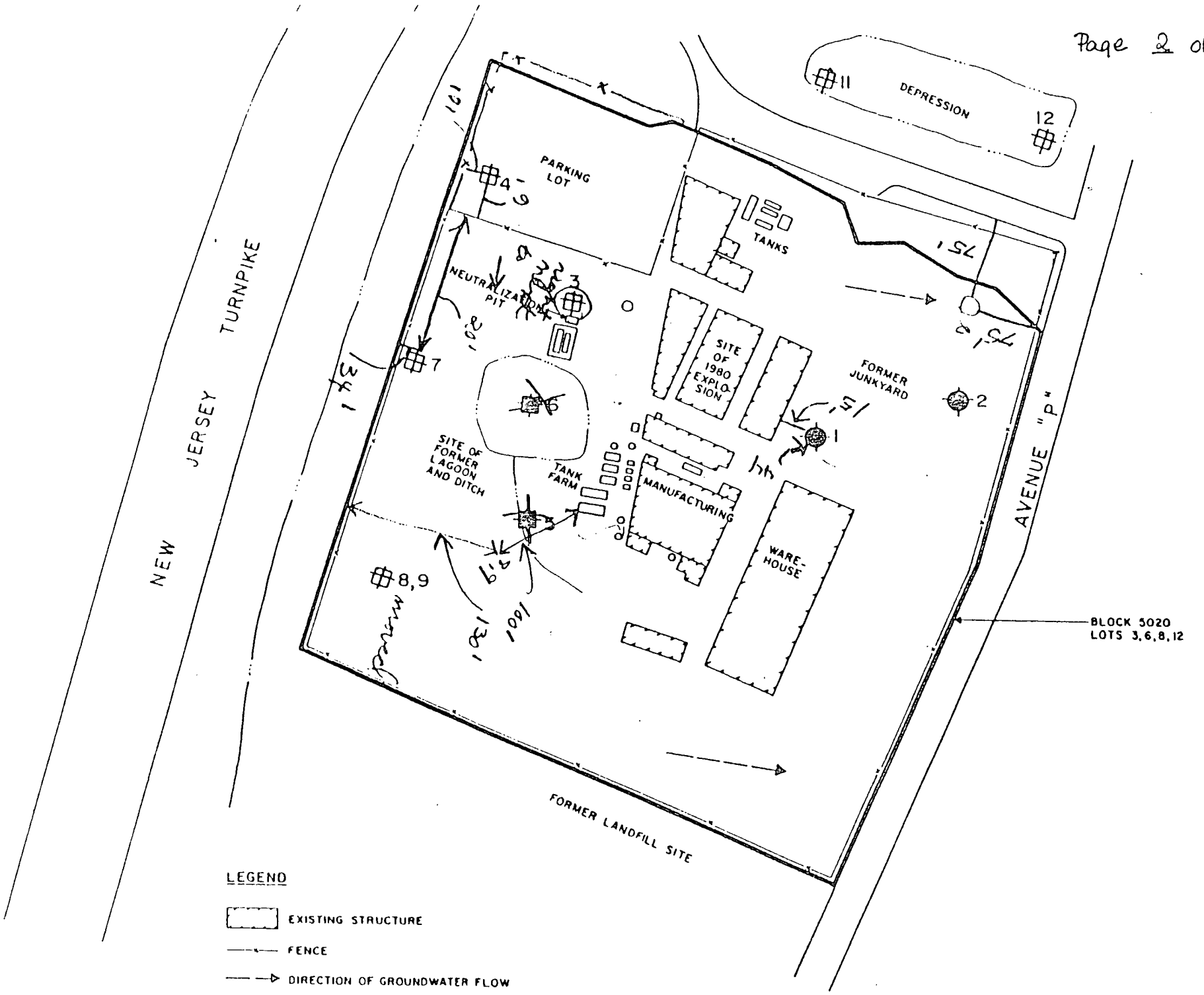
NJDEP: Bill Mennel

Sample I.D.	Map. Ref.	E.T.C. I.D.	P.I. Levels (seal break - reseal WM)	Roll/Picture No.	Notes
Surface 16-1	1	H6194	~1 12:56 / 1:00	33 #17	1 ft depth USED SPOON
" 16-2	2	H6195	~1 12:41 / 12:45	3-16 USED SPOON	~~1.5-2 ft~~ 0 - 8" DRUMS ENCOUNTERED @ 1'
16-3	3	H6196	~1 11:06 / 11:10	3-13	WITH SPOON & SCREW
16-4	4	H6197	~1 10:47 / 10:52	3-12	
deleted - contact dig thru soil 16-5	5	H6198	—		Scrubbed
16-6	6	H6199	5.2	3-18	3 HOUR Scrubbed
16-7	7	H6200	~1 11:25 / 11:29	3-14	
16-8	8	H6201	~1 11:44 / 11:47	3-15	WITH SPOON
16-9	7 dup.	H6202	~1 " "	"	" 2-3"
16-10	Blank	H6203	— 13:34 - 13:35		
16-11	11	H6204	~1 10:39 / 10:41	3-11	
16-12	12	H6205	~1 10:29 / 10:32	3-10	

General Notes: NJDEP 16-1 and 16-7 Splits for Alliance

943390166

Map on back


NEW JERSEY TURNPIKE
AVENUE "P"
PARKING LOT
DEPRESSION
TANKS
NEUTRALIZATION PIT
SITE OF 1980 EXPLOSION
FORMER JUNKYARD
SITE OF FORMER LAGOON AND DITCH
TANK FARM
MANUFACTURING
WARE-HOUSE
FORMER LANDFILL SITE
BLOCK 5020
LOTS 3, 6, 8, 12
LEGEND
EXISTING STRUCTURE
FENCE
DIRECTION OF GROUNDWATER FLOW
DRAINAGE DITCH

943390167

Sample I.D.	General Notes
16-1	Sample taken 15' W of building and 44' N of SE corner of building. Dug to approx. 1' with shovel and took sample from compacted debris with spoon.
16-2	Sample taken about 75' perpendicular distance from north and east property fences. Dug to approx. 1' depth and encountered impenetrable debris. Took sample with spoon.
16-3	Sample taken directly on north side of neutralization pit. Used spoon and screen because of gravelly material.
16-4	Sample taken in runoff channel 10' E and 6' N of fences (perpendicular measurements).
16-5, 16-6	attempted to dig through debris but encountered obstacles. Noted venting of sampling pipe protruding diagonally from ground near 16-6. PI reading of 5.2 ppm at ground surface.

Sample I.D.	General Notes
16-7	Sample moved to depression west of neutralization pit because this area caught more of the site drainage. Sample taken 24'S and 37' E of fences (⊥ distances)
16-8	Sample moved closer to tank farm to an area which appeared to capture more of the site drainage. Sample taken 130' E of fence (⊥ distance) and 100' SW of the corner of the southernmost storage tank. Used a spoon because of the hardpacked surface.
16-9	Duplicate of 16-8.
16-10	Blank
16-11	Sample taken at the western end of the small pond.
16-12	Sample taken at the eastern end of the pond.

APPENDIX D

Slides of Sampling Locations

Slides of this site are included in the original of this report which is on file with the New Jersey Department of Environmental Protection, Division of Waste Management at 428 East State Street, Trenton, New Jersey.

Alliance Chemical
Transect 1, Cores 62 and 100, and Plum Creek
Inorganics

		TRANSECT 1										Plum Creek West		Plum Creek East	
Contaminant	Site Use	Core 201	Dates	Core 202	Dates	Core 203	Dates	Sample 62	Dates	Sample 100	Dates	PRP-99-06-SD-1	Years	PRP-99-05-SD-1	Years
Zinc	Used on site	449	1995-1991	556	1995-1995	440	1995-1992	481	C.F.	478	1993	1100	C.F.	191	C.F.
(mg/Kg)		495	1991-1983			540	1992-1986	1110	C.F.	609	1976				
		414	1983-1976	634	1995-1990			213	C.F.	212	1964				
mean: 770		393	1976-1968			482	1986-1980			97.1	1952				
high: 3110	15,100	541	1968-1960	980	1990-1989										
	SS-18	613		1010	1989-1988	1100	1980-1974								
top 20															
60cm						1100	1974-1969								
** #1 in river															
						1600	1969-1963								
Cyanide	In site soil	ND	1995-1991	ND	1995-1995	ND	1995-1992	ND	C.F.	NA	1993	ND	C.F.	ND	C.F.
(mg/Kg)		ND	1991-1983			ND	1992-1986	ND	C.F.	NA	1976				
		ND	1983-1976	ND	1995-1990			ND	C.F.	NA	1964				
mean: 1.24		ND	1976-1968			ND	1986-1980			NA	1952				
high: 2.7	16.3	ND	1968-1960	ND	1990-1989										
	S-11	ND	1960-1953	ND	1989-1988	ND	1980-1974								
top 20															
60cm						1.1	1974-1969								
** #1 in river															
						ND	1969-1963								

ND = Not detected
C.F. = Chronology Failed

Note: Cores 62 and 100 are not included in the statistical calculations but are color-coded for comparison

Alliance Chemical
Transect 1, Cores 62 and 100, and Plum Creek
Inorganics

		TRANSECT 1										Plum Creek West		Plum Creek East	
Contaminant	Site Use	Core 201	Dates	Core 202	Dates	Core 203	Dates	Sample 62	Dates	Sample 100	Dates	PRP-99-06-SD-1	Years	PRP-99-05-SD-1	Years
Chromium	In site soil	158	1995-1991	111	1995-1995	181	1995-1992	235	C.F.	207.0	1993	88	C.F.	24.3	C.F.
(mg/Kg)		141	1991-1983			200	1992-1986	410	C.F.	117.0	1976				
		161	1983-1976	180	1995-1990			221	C.F.	43.1	1964				
mean: 307		136	1976-1968			233	1986-1980			35.6	1952				
high: 2,160	92.6	258	1968-1960		1990-1989										
	S-1	306	1960-1953		1989-1988		1980-1974								
top 20															
							1974-1969								
							1969-1963								
Lead	In site soil	225	1995-1991	287	1995-1995	238	1995-1992	239	C.F.	238	1993	1550	C.F.	123	C.F.
(mg/Kg)		254	1991-1983			288	1992-1986		C.F.		1976				
		219	1983-1976	335	1995-1990			385	C.F.		1964				
mean: 462		199	1976-1968			252	1986-1980			59.4	1952				
high: 17,900	1,430	301	1968-1960		1990-1989										
	S-5	354	1960-1953		1989-1988	424	1980-1974								
top 20															
							1974-1969								
							1969-1963								
Mercury	In site soil	3.6	1995-1991	3	1995-1995	3.9	1995-1992	3.3	C.F.	3.2	1993	1.56	C.F.	0.37	C.F.
(mg/Kg)		3.6	1991-1983			4.4	1992-1986	2.9	C.F.	0.5	1976				
		3.7	1983-1976	4	1995-1990			2.9	C.F.	0.28	1964				
mean: 6.92		3.4	1976-1968			5.6	1986-1980			0.22	1952				
high: 28.3	96.3	6.7	1968-1960		1990-1989										
	S-1		1960-1953		1989-1988		1980-1974								
top 20															
							1974-1969								
							1969-1963								
Nickel	In site soil	42.2	1995-1991	38.8	1995-1995	41.4	1995-1992		C.F.	178	1993	134	C.F.	17.4	C.F.
(mg/Kg)		39.5	1991-1983			46.3	1992-1986		C.F.	17.7	1976				
		44.8	1983-1976	45.6	1995-1990				C.F.	9.5	1964				
mean: 56.65		33.6	1976-1968			43.5	1986-1980			9.8	1952				
high: 369	52	44.4	1968-1960		1990-1989										
	S-13	50			1989-1988		1980-1974								
top 20															
							1974-1969								
							1969-1963								
Selenium	In site soil	ND	1995-1991	ND	1995-1995	ND	1995-1992	1.6	C.F.	ND	1993	2.1	C.F.	0.7	C.F.
(mg/Kg)		ND	1991-1983			ND	1992-1986	1.7	C.F.	ND	1976				
		ND	1983-1976	1.3	1995-1990			1.3	C.F.	ND	1964				
mean:		0.99	1976-1968			1.1	1986-1980			ND	1952				
high:	2.5	1.3	1968-1960	1.4	1990-1989										
	S-5	1.7		1.3	1989-1988	1.6	1980-1974								
top 20															
						2.1	1974-1969								
						2	1969-1963								

ND = Not detected
C.F. = Chronology Failed

Note: Cores 62 and 100 are not included in the statistical calculations but are color-coded for comparison

Alliance Chemical
Transect 1, Cores 62 and 100, and Plum Creek
Inorganics

		TRANSECT 1										Plum Creek West		Plum Creek East	
Contaminant	Site Use	Core 201	Dates	Core 202	Dates	Core 203	Dates	Sample 62	Dates	Sample 100	Dates	PRP-99-06-SD-1	Years	PRP-99-05-SD-1	Years
Antimony	In site soil	ND	1995-1991	ND	1995-1995	ND	1995-1992	33.6	C.F.	ND	1993	38	C.F.	1.4	C.F.
(mg/Kg)		ND	1991-1983			ND	1992-1986	29	C.F.	35.6	1976				
		ND	1983-1976	ND	1995-1990			28.4	C.F.	10.1	1964				
mean: 850		ND	1976-1968			ND	1986-1980			ND	1952				
high: 7,560	17.8	ND	1968-1960	ND	1990-1989										
	S-7	ND	1960-1953	ND	1989-1988	ND	1980-1974								
top 20															
above mean						ND	1974-1969								
						ND	1969-1963								
Arsenic	In site soil	10.2	1995-1991	10.1	1995-1995	11.9	1995-1992	12.7	C.F.	8.9	1993	108	C.F.	5.3	C.F.
(mg/Kg)		9	1991-1983			13	1992-1986	21.9	C.F.	33.4	1976				
		10	1983-1976	11.5	1995-1990			10.8	C.F.	12.1	1964				
mean: 20.01		10.4	1976-1968			17.6	1986-1980			6.8	1952				
high: 125	15.4	14.9	1968-1960	16.6	1990-1989										
	S-5	21.1	1960-1953	15.1	1989-1988	17	1980-1974								
top 20															
above mean						34.9	1974-1969								
						21.6	1969-1963								
Beryllium	In site soil	ND	1995-1991	ND	1995-1995	ND	1995-1992	1.1	C.F.	1.0	1993	0.87	C.F.	0.56	C.F.
		ND	1991-1983			ND	1992-1986	0.97	C.F.	ND	1976				
		ND	1983-1976	ND	1995-1990			1.4	C.F.	ND	1964				
mean: 0.92		ND	1976-1968			ND	1986-1980			0.52	1952				
high: 1.30	8.0	ND	1968-1960	ND	1990-1989										
	S-11	ND	1960-1953	ND	1989-1988	ND	1980-1974								
top 20															
above mean						ND	1974-1969								
						ND	1969-1963								
Cadmium	In site soil	2.9	1995-1991	4.1	1995-1995	4.3	1995-1992	5	C.F.	7.9	1993	6.57	C.F.	1.09	C.F.
		3.6	1991-1983			5.4	1992-1986	13.5	C.F.	7.8	1976				
		3.6	1983-1976	5.9	1995-1990			9.5	C.F.	2.5	1964				
mean: 11.77		3.7	1976-1968			5.7	1986-1980			2.3	1952				
high: 39.6	141	5.9	1968-1960	11.8	1990-1989										
	S-11	6.2	1960-1953	11.4	1989-1988	9.6	1980-1974								
top 20															
above mean						21.3	1974-1969								
						21.5	1969-1963								
Copper	Used on site	197	1995-1991	183	1995-1995	202	1995-1992	225	C.F.	237	1993	296	C.F.	100	C.F.
(mg/Kg)		195	1991-1983			234	1992-1986	460	C.F.	683	1976				
		184	1983-1976	244	1995-1990			290	C.F.	247	1964				
mean: 312		168	1976-1968			233	1986-1980			43.2	1952				
high: 3,020	1,050	263	1968-1960	362	1990-1989										
	S-9	306	1960-1953	454	1989-1988	407	1980-1974								
top 20						606	1974-1969								
above mean															
						652	1969-1963								

ND = Not detected
C.F. = Chronology Failed

Note: Cores 62 and 100 are not included in the statistical calculations but are color-coded for comparison

Alliance Chemical
Transect 1, Cores 62 and 100, and Plum Creek
Semi-VOAs

		TRANSECT 1										Plum Creek West		Plum Creek East	
Contaminant	Site Use	Core 201	Dates	Core 202	Dates	Core 203	Dates	Sample 62	Dates	Sample 100	Dates	PRP-99-06-SD-1	Years	PRP-99-05-SD-1	Years
Phenanthrene	In site soil	990	1995-1991	1,800	1995-1995	ND	1995-1992	570	C.F.	14000	1993	1500	C.F.	NA	
(ug/Kg)		1,200	1991-1983			ND	1992-1986	530	C.F.	280000	1976				
		960	1983-1976	1,600	1995-1990			750	C.F.	54000	1964				
mean: 7,097		ND	1976-1968			ND	1986-1980			2,300	1952				
high: 570,000	4,300	890	1968-1960	2,600	1990-1989										
	SS-18	9000	1960-1953	3,200	1989-1988	1,100	1980-1974								
top 20															
above mean						3,700	1974-1969								
						3,800	1969-1963								
Phenol	In site soil	ND	1995-1991	ND	1995-1995	ND	1995-1992	ND	C.F.	1200	1993	ND	C.F.	NA	
		ND	1991-1983			ND	1992-1986	ND	C.F.	ND	1976				
mean: 2,300		ND	1983-1976	ND	1995-1990			ND	C.F.	2000	1964				
high: 2,300		ND	1976-1968			ND	1986-1980			ND	1952				
	54	ND	1968-1960	ND	1990-1989										
top 20	SS-14	ND	1960-1953	ND	1989-1988	ND	1980-1974								
above mean															
						ND	1974-1969								
						ND	1969-1963								
Pyrene	In site soil	2,200	1995-1991	3,600	1995-1995	2,400	1995-1992	1,300	C.F.	9500	1993	3000	C.F.	NA	
(ug/Kg)		2,900	1991-1983			2,800	1992-1986	1,600	C.F.	140000	1976				
		2,400	1983-1976	3,700	1995-1990			1,800	C.F.	26000	1964				
mean: 7,807		2,000	1976-1968			2,300	1986-1980			1,500	1952				
high: 340,000	5,000	2,800	1968-1960	4,600	1990-1989										
	SS-14	9000	1960-1953	5,700	1989-1988	2,900	1980-1974								
top 20															
above mean						2,800	1974-1969								
						5,000	1969-1963								

NA = Not Analyzed
ND = Not detected
C.F. = Chronology Failed

Note: Cores 62 and 100 are not included in the statistical calculations but are color-coded for comparison

Alliance Chemical
Transect 1, Cores 62 and 100, and Plum Creek
Semi-VOAs

		TRANSECT 1										Plum Creek West		Plum Creek East	
Contaminant	Site Use	Core 201	Dates	Core 202	Dates	Core 203	Dates	Sample 62	Dates	Sample 100	Dates	PRP-99-06-SD-1	Years	PRP-99-05-SD-1	Years
Di-n-octylphthalate	In site soil	ND	1995-1991	ND	1995-1995	ND	1995-1992	ND	C.F.	6000	1993	ND	C.F.	NA	
(ug/Kg)		ND	1991-1983			ND	1992-1986	ND	C.F.	170000**	1976				
		ND	1983-1976	1,400	1995-1990			430	C.F.	48000	1964				
mean: 4,832		ND	1976-1968			ND	1986-1980			2,200	1952				
high: 25,000	72	1,700	1968-1960	2,900	1990-1989										
	S-9	6500	1960-1953	5000	1989-1988	1,900	1980-1974								
						9300	1974-1969								
top 20															
above mean						4800	1969-1963								
Highest in PRSA (see note)															
Fluorene	In site soil	ND	1995-1991	ND	1995-1995	ND	1995-1992	ND	C.F.	4300	1993	210	C.F.	NA	
(ug/Kg)		ND	1991-1983			ND	1992-1986	950	C.F.	100000	1976				
		ND	1983-1976	ND	1995-1990			ND	C.F.	19000	1964				
mean: 3,432		ND	1976-1968			ND	1986-1980			690	1952				
high: 140,000	630	ND	1968-1960	ND	1990-1989										
	S-9	2,400	1960-1953	ND	1989-1988	ND	1980-1974								
top 20															
above mean						1,200	1974-1969								
						950	1969-1963								
Fluoranthene	In site soil	2,700	1995-1991	3,700	1995-1995	2,500	1995-1992	1,500	C.F.	11000	1993	4000	C.F.	NA	
(ug/Kg)		3,100	1991-1983			2,700	1992-1986	1,600	C.F.	180000	1976				
		2,700	1983-1976	3,500	1995-1990			1,800	C.F.	3,400	1964				
mean: 6,820		2,400	1976-1968			2,300	1986-1980			2,000	1952				
high: 320,000	5,700	3,100	1968-1960	4,300	1990-1989										
	S-5	10000	1960-1953	5,100	1989-1988	2,800	1980-1974								
top 20															
above mean						4,600	1974-1969								
						4,900	1969-1963								
Indeno(1,2,3-cd)pyrene	In site soil	ND	1995-1991	1,400	1995-1995	960	1995-1992	400	C.F.	2500	1993	1000	C.F.	NA	
(ug/Kg)		990	1991-1983			1,000	1992-1986	400	C.F.	32000	1976				
		880	1983-1976	1,300	1995-1990			ND	C.F.	4700	1964				
mean: 1,886		ND	1976-1968			ND	1986-1980			280	1952				
high: 57,000	4,000	900	1968-1960	1,300	1990-1989										
	S-5	2800	1960-1953	1,600	1989-1988	ND	1980-1974								
top 20															
above mean						ND	1974-1969								
						970	1969-1963								
Naphthalene	In site soil	ND	1995-1991	ND	1995-1995	ND	1995-1992	ND	C.F.	6500	1993	ND	C.F.	NA	
(ug/Kg)		ND	1991-1983			ND	1992-1986	ND	C.F.	40000	1976				
		ND	1983-1976	ND	1995-1990			ND	C.F.	43000	1964				
mean: 9,587		ND	1976-1968			ND	1986-1980			1,400	1952				
high: 270,000	25,000	ND	1968-1960	ND	1990-1989										
	S-9	2,100	1960-1953	ND	1989-1988	ND	1980-1974								
top 20															
above mean						1,600	1974-1969								
						1,400	1969-1963								

NA = Not Analyzed
ND = Not detected
C.F. = Chronology Failed

Note: Cores 62 and 100 are not included in the statistical calculations but are color-coded for comparison

Alliance Chemical
Transect 1, Cores 62 and 100, and Plum Creek
Semi-VOAs

		TRANSECT 1										Plum Creek West		Plum Creek East	
Contaminant	Site Use	Core 201	Dates	Core 202	Dates	Core 203	Dates	Sample 62	Dates	Sample 100	Dates	PRP-99-06-SD-1	Years	PRP-99-05-SD-1	Years
Carbazole	In site soil	ND	1995-1991	ND		ND	1995-1992	ND	C.F.	640	1993	ND	C.F.	NA	
(ug/Kg)		ND	1991-1983			ND	1992-1986	ND	C.F.	11000	1976				
		ND	1983-1976	ND				ND	C.F.	3400	1964				
mean: 1,785		ND	1976-1968			ND	1986-1980			ND	1952				
high: 11,000	180	ND	1968-1960	ND											
	SS-14	1500	1960-1953	ND		ND	1980-1974								
top 20															
above mean						ND	1974-1969								
Highest in PRSA															
						ND	1969-1963								
Chrysene	In site soil	1,500	1995-1991	2,400	1995-1995	1,500	1995-1992	1,000	C.F.	4300	1993	2300	C.F.	NA	
(ug/Kg)		1,800	1991-1983			1,500	1992-1986	970	C.F.	82000	1976				
		1,500	1983-1976	2,100	1995-1990			930	C.F.	8900	1964				
mean: 3,915		1,200	1976-1968			1,200	1986-1980			780	1952				
high: 150,000	31,000	1,700	1968-1960	2,300	1990-1989										
	S-1	4500	1960-1953	2,600	1989-1988	1,400	1980-1974								
top 20															
above mean						1,700	1974-1969								
						2,400	1969-1963								
Dibenzofuran	In site soil	ND	1995-1991	ND	1995-1995	ND	1995-1992	ND	C.F.	3000	1993	ND	C.F.	NA	
(ug/Kg)		ND	1991-1983			ND	1992-1986	500	C.F.	74000	1976				
		ND	1983-1976	ND	1995-1990			ND	C.F.	8400	1964				
mean: 3,518		ND	1976-1968			ND	1986-1980			450	1952				
high: 70,000	370	ND	1968-1960	ND	1990-1989										
	S-9	1300	1960-1953	ND	1989-1988	ND	1980-1974								
top 20															
above mean						ND	1974-1969								
						ND	1969-1963								
Dibenz(a,h)anthracene	In site soil	ND	1995-1991	ND	1995-1995	ND	1995-1992	ND	C.F.	860	1993	290	C.F.	NA	
(ug/Kg)		ND	1991-1983			ND	1992-1986	560	C.F.	19000	1976				
		ND	1983-1976	ND	1995-1990			ND	C.F.	1700	1964				
mean: 1,513		ND	1976-1968			ND	1986-1980			ND	1952				
high: 25,000	660	ND	1968-1960	ND	1990-1989										
	S-5	1,400	1960-1953	830	1989-1988	ND	1980-1974								
top 20															
above mean						ND	1974-1969								
						ND	1969-1963								
Di-n-butylphthalate	In site soil	ND	1995-1991	ND	1995-1995	ND	1995-1992	ND	C.F.	690	1993	870	C.F.	NA	
		ND	1991-1983			ND	1992-1986	ND	C.F.	38000	1976				
mean: 2,434		ND	1983-1976	ND	1995-1990			ND	C.F.	4200	1964				
high: 4,900		810	1976-1968			ND	1986-1980			ND	1952				
	710	ND	1968-1960	ND	1990-1989										
top 20	S-5	ND	1960-1953	690	1989-1988	ND	1980-1974								
above mean															

NA = Not Analyzed
ND = Not detected
C.F. = Chronology Failed

Note: Cores 62 and 100 are not included in the statistical calculations but are color-coded for comparison

Alliance Chemical
Transect 1, Cores 62 and 100, and Plum Creek
Semi-VOAs

		TRANSECT 1										Plum Creek West		Plum Creek East	
Contaminant	Site Use	Core 201	Dates	Core 202	Dates	Core 203	Dates	Sample 62	Dates	Sample 100	Dates	PRP-99-06-SD-1	Years	PRP-99-05-SD-1	Years
Benzo(b)fluoranthene	In site soil	1,100	1995-1991	2,400	1995-1995	1,500	1995-1992	640	C.F.	4300	1993	3100	C.F.	NA	
(ug/Kg)		1,200	1991-1983			1,800	1992-1986	810	C.F.	56000	1976				
		1,300	1983-1976	2,000	1995-1990			1,100	C.F.	11000	1964				
mean: 2,865		1,100	1976-1968			1,200	1986-1980			600	1952				
high: 100,000	4,500	1,400	1968-1960	1,700	1990-1989										
	S-8	3900	1960-1953	1,900	1989-1988	1,300	1980-1974								
top 20															
above mean						1,400	1974-1969								
						1,400	1969-1963								
Benzo(k)fluoranthene	In site soil	1,300	1995-1991	1,900	1995-1995	1,200	1995-1992	810	C.F.	2900	1993	ND	C.F.	NA	
(ug/Kg)		1,700	1991-1983			1,200	1992-1986	780	C.F.	41000	1976				
		1,300	1983-1976	1,100	1995-1990			900	C.F.	10000	1964				
mean: 2,556		800	1976-1968			870	1986-1980			250	1952				
high: 63,000	2,000	1,000	1968-1960	1,400	1990-1989										
	SS-14	5000	1960-1953	1,800	1989-1988	1,000	1980-1974								
top 20															
above mean						1,700	1974-1969								
						1,300	1969-1963								
Benzo(g,h,i)perylene	In site soil	ND	1995-1991	1,400	1995-1995	1,000	1995-1992	ND	C.F.	2400	1993	890	C.F.	NA	
(ug/Kg)		1,000	1991-1983			1,100	1992-1986	390	C.F.	23000	1976				
		910	1983-1976	1,200	1995-1990			ND	C.F.	3600	1964				
mean: 2,030		ND	1976-1968			ND	1986-1980			270	1952				
high: 63,000	2,800	930	1968-1960	1,200	1990-1989										
	S-5	2800	1960-1953	1,600	1989-1988	930	1980-1974								
top 20															
above mean						ND	1974-1969								
						930	1969-1963								
Butylbenzylphthalate	In site soil	ND	1995-1991	980	1995-1995	ND	1995-1992	ND	C.F.	ND	1993	ND	C.F.	NA	
(ug/Kg)		ND	1991-1983			ND	1992-1986	ND	C.F.	ND	1976				
		ND	1983-1976	ND	1995-1990			ND	C.F.	ND	1964				
mean: 2,203		ND	1976-1968			ND	1986-1980			ND	1952				
high: 25,000	140	ND	1968-1960	ND	1990-1989										
	S-9	ND	1960-1953	ND	1989-1988	ND	1980-1974								
						ND	1974-1969								
top 20															
above mean						ND	1969-1963								
Bis (2-ethylhexyl)phthalate	In site soil	11,000	1995-1991	12,000	1995-1995	13,000	1995-1992	7,400	C.F.	40000	1993	4400	C.F.	NA	
(ug/Kg)		15,000	1991-1983			19,000	1992-1986	10,000	C.F.	150000	1976				
		14,000	1983-1976	58000	1995-1990			13,000	C.F.	ND	1964				
mean: 34,101		20,000	1976-1968			74000	1986-1980			25,000	1952				
high: 280,000	55,000	67000	1968-1960	93000	1990-1989										
	S-13	54000	1960-1953	120000	1989-1988	140000	1980-1974								
** #1 in river						3,300	1974-1969								
top 20															
above mean						280000**	1969-1963								

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C.F. = Chronology Failed

Note: Cores 62 and 100 are not included in the statistical calculations but are color-coded for comparison

Alliance Chemical
Transect 1, Cores 62 and 100, and Plum Creek
Semi-VOAs

		TRANSECT 1										Plum Creek West		Plum Creek East	
Contaminant	Site Use	Core 201	Dates	Core 202	Dates	Core 203	Dates	Sample 62	Dates	Sample 100	Dates	PRP-99-06-SD-1	Years	PRP-99-05-SD-1	Years
Acenaphthene	In site soil	ND	1995-1991	ND	1995-1995	ND	1995-1992	ND	C.F.	3,800	1993	170	C.F.	NA	
(ug/Kg)		ND	1991-1983			ND	1992-1986	800	C.F.	86000	1976				
		ND	1983-1976	ND	1995-1990			ND	C.F.	11000	1964				
mean: 7,317		ND	1976-1968			ND	1986-1980			570	1952				
high: 420,000	560	ND	1968-1960	ND	1990-1989										
	S-9	2,200	1960-1953	ND	1989-1988	ND	1980-1974								
top 20															
above mean						ND	1974-1969								
						ND	1969-1963								
Acenaphthylene	In site soil	ND	1995-1991	ND	1995-1995	ND	1995-1992	ND	C.F.	720	1993	ND	C.F.	NA	
(ug/Kg)		ND	1991-1983			ND	1992-1986	ND	C.F.	8700	1976				
		ND	1983-1976	ND	1995-1990			ND	C.F.	1900	1964				
mean: 2,036		ND	1976-1968			ND	1986-1980			ND	1952				
high: 17,000	560	ND	1968-1960	ND	1990-1989										
	SS-18	ND	1960-1953	ND	1989-1988	ND	1980-1974								
						ND	1974-1969								
top 20															
above mean						ND	1969-1963								
Anthracene	In site soil	ND	1995-1991	ND	1995-1995	ND	1995-1992	400	C.F.	5100	1993	430	C.F.	NA	
(ug/Kg)		ND	1991-1983			ND	1992-1986	330	C.F.	96000	1976				
		ND	1983-1976	ND	1995-1990			ND	C.F.	12000	1964				
mean: 3,821		ND	1976-1968			ND	1986-1980			800	1952				
high: 230,000	4,200	ND	1968-1960	1,100	1990-1989										
	SS-19a	4200	1960-1953	1,300	1989-1988	ND	1980-1974								
top 20															
above mean						1,400	1974-1969								
						1,500	1969-1963								
Benzo(a)anthracene	In site soil	1,200	1995-1991	1,800	1995-1995	1,200	1995-1992	810	C.F.	5000	1993	1900	C.F.	NA	
(ug/Kg)		1,400	1991-1983			1,100	1992-1986	790	C.F.	72000	1976				
		120	1983-1976	1,500	1995-1990			800	C.F.	11000	1964				
mean: 3,546		980	1976-1968			1,000	1986-1980			670	1952				
high: 150,000	1,000,000	1,400	1968-1960	1,800	1990-1989										
	S-1	4800	1960-1953	2,100	1989-1988	1,100	1980-1974								
top 20															
above mean						1,500	1974-1969								
						1,700	1969-1963								
Benzo(a)pyrene	In site soil	1,100	1995-1991	2,200	1995-1995	1,400	1995-1992	920	C.F.	4300	1993	2000	C.F.	NA	
(ug/Kg)		1,400	1991-1983			1,400	1992-1986	910	C.F.	54000	1976				
		1,300	1983-1976	1,700	1995-1990			940	C.F.	9400	1964				
mean: 3,231		1,000	1976-1968			1,100	1986-1980			560	1952				
high: 130,000	3,700	1,400	1968-1960	1,800	1990-1989										
	S-5	4100	1960-1953	1,900	1989-1988	1,200	1980-1974								
top 20															
above mean						1,400	1974-1969								
						1,600	1969-1963								

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C.F. = Chronology Failed

Note: Cores 62 and 100 are not included in the statistical calculations but are color-coded for comparison

Alliance Chemical
Transect 1, Cores 62 and 100, and Plum Creek
Semi-VOAs

		TRANSECT 1										Plum Creek West		Plum Creek East	
Contaminant	Site Use	Core 201	Dates	Core 202	Dates	Core 203	Dates	Sample 62	Dates	Sample 100	Dates	PRP-99-06-SD-1	Years	PRP-99-05-SD-1	Years
1,2,4-Trichlorobenzene	Used on site	ND	1995-1991	ND	1995-1995	ND	1995-1992	ND	C.F.	2500	1993	ND	C.F.	NA	
		ND	1991-1983			ND	1992-1986	ND	C.F.	120000	1976				
mean: 252,240		ND	1983-1976	ND	1995-1990			ND	C.F.	11000	1964				
high: 1,100,000		ND	1976-1968			ND	1986-1980			ND	1952				
	55,000	ND	1968-1960	ND	1990-1989										
top 20	SS-19a	ND	1960-1953	690	1989-1988	ND	1980-1974								
above mean															
						ND	1974-1969								
						ND	1969-1963								
1,4-Dichlorobenzene	In site soil	ND	1995-1991	ND	1995-1995	ND	1995-1992	ND	C.F.	ND	1993	ND	C.F.	NA	
(ug/Kg)		ND	1991-1983			ND	1992-1986	ND	C.F.	ND	1976				
		ND	1983-1976	ND	1995-1990			ND	C.F.	1300	1964				
mean: 33,797		ND	1976-1968			ND	1986-1980			ND	1952				
high: 200,000	4,600	ND	1968-1960	ND	1990-1989										
	S-4	ND	1960-1953	ND	1989-1988	ND	1980-1974								
top 20															
above mean						ND	1974-1969								
						ND	1969-1963								
2-Methylnaphthalene	In site soil	ND	1995-1991	ND	1995-1995	ND	1995-1992	ND	C.F.	4300	1993	ND	C.F.	NA	
(ug/Kg)		ND	1991-1983			ND	1992-1986	380	C.F.	38000	1976				
		ND	1983-1976	ND	1995-1990			ND	C.F.	24000	1964				
mean: 7,748		ND	1976-1968			ND	1986-1980			720	1952				
high: 220,000	2,000	ND	1968-1960	ND	1990-1989										
	S-5	ND	1960-1953	ND	1989-1988	ND	1980-1974								
top 20															
above mean						980	1974-1969								
						1,100	1969-1963								
2,4-Dichlorophenol	In site soil	ND	1995-1991	ND	1995-1995	ND	1995-1992	ND	C.F.	ND	1993	ND	C.F.	NA	
(ug/Kg)		ND	1991-1983			ND	1992-1986	ND	C.F.	ND	1976				
		ND	1983-1976	ND	1995-1990			ND	C.F.	ND	1964				
mean: 84,919		ND	1976-1968			ND	1986-1980			ND	1952				
high: 2,500,000	14,000	ND	1968-1960	ND	1990-1989										
	S-4	ND	1960-1953	ND	1989-1988	ND	1980-1974								
						ND	1974-1969								
top 20															
above mean						ND	1969-1963								
4-Chloroaniline	In site soil	ND	1995-1991	ND	1995-1995	ND	1995-1992	ND	C.F.	ND	1993	ND	C.F.	NA	
(ug/Kg)		ND	1991-1983			ND	1992-1986	ND	C.F.	ND	1976				
		ND	1983-1976	ND	1995-1990			ND	C.F.	ND	1964				
mean: 990		ND	1976-1968			ND	1986-1980			ND	1952				
high: 1,100	2,600	ND	1968-1960	ND	1990-1989										
	S-5	ND	1960-1953	ND	1989-1988	ND	1980-1974								
						ND	1974-1969								
top 20															
above mean						100**	1969-1963								
**Highest hit in river															

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ND = Not detected
C.F. = Chronology Failed

Note: Cores 62 and 100 are not included in the statistical calculations but are color-coded for comparison

Alliance Chemical
Transect 1, Cores 62 and 100, and Plum Creek
VOAs and Dioxin

		TRANSECT 1										Plum Creek West		Plum Creek East	
Contaminant	Site Use	Core 201	Dates	Core 202	Dates	Core 203	Dates	Core 62	Dates	Core 100	Dates	PRP-99-06-SD-1	Years	PRP-99-05-SD-1	Years
Acetone	Used on site	34	1995-1991	34	1995-1995	430	1995-1992	2000	C.F.	140	1993	NA		NA	
(ug/Kg)		870	1991-1983			440	1992-1986	8000	C.F.	420	1976				
		800	1983-1976	45	1995-1990			5200	C.F.	190	1964				
		550	1976-1968			57	1986-1980			140	1952				
	8,500	420	1968-1960	170	1990-1989										
	S-2	250	1960-1953	71	1989-1988	180	1980-1974								
						280	1974-1969								
						270	1969-1963								
Chlorobenzene	In site soil	ND	1995-1991	ND	1995-1995	ND	1995-1992	ND	C.F.	ND	1993	NA		NA	
(ug/Kg)		ND	1991-1983			ND	1992-1986	ND	C.F.	ND	1976				
		ND	1983-1976	ND	1995-1990			ND	C.F.	ND	1964				
		ND	1976-1968			ND	1986-1980			ND	1952				
	360,000	ND	1968-1960	ND	1990-1989										
	S-2	ND	1960-1953	ND	1989-1988	ND	1980-1974								
						ND	1974-1969								
						67	1969-1963								
Methylene chloride	In site soil	ND	1995-1991	ND	1995-1995	ND	1995-1992	37	C.F.	10	1993	NA		NA	
(ug/Kg)		ND	1991-1983			ND	1992-1986	33	C.F.	29	1976				
		ND	1983-1976	ND	1995-1990			26	C.F.	ND	1964				
		ND	1976-1968			ND	1986-1980			10	1952				
	12,000	ND	1968-1960	ND	1990-1989										
	S-2	ND	1960-1953	ND	1989-1988	ND	1980-1974								
						ND	1974-1969								
						ND	1969-1963								
2,3,7,8-TCDD		169	1995-1991	220	1995-1995	228	1995-1992	380	C.F.	130	1993	55		52	
(ng/Kg)		442	1991-1983			288	1992-1986	160	C.F.	83	1976				
		272	1983-1976	433	1995-1990			350	C.F.	99	1964				
mean: 6,596		1,000	1976-1968			520	1986-1980			17	1952				
high: 93,2000		378	1968-1960	883	1990-1989										
		356	1960-1953	947	1989-1988	403	1980-1974								
top 20															
above mean						4,650	1974-1969								
						2,350	1969-1963								

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ND = Not detected
C.F.= Chronology Failed

Note: Cores 62 and 100 are not included in the statistical calculations but are color-coded for comparison

Alliance Chemical
Transect 1, Cores 62 and 100, and Plum Creek
VOAs and Dioxin

		TRANSECT 1										Plum Creek West		Plum Creek East	
Contaminant	Site Use	Core 201	Dates	Core 202	Dates	Core 203	Dates	Core 62	Dates	Core 100	Dates	PRP-99-06-SD-1	Years	PRP-99-05-SD-1	Years
Benzene	In site soil	ND	1995-1991	ND	1995-1995	ND	1995-1992	ND	C.F.	ND	1993	NA		NA	
(ug/Kg)		ND	1991-1983			ND	1992-1986	ND	C.F.	75	1976				
		ND	1983-1976	ND	1995-1990			ND	C.F.	28	1964				
		ND	1976-1968			ND	1986-1980			ND	1952				
	18	140	1968-1960	ND	1990-1989										
	S-4	300	1960-1953	ND	1989-1988	ND	1980-1974								
						ND	1974-1969								
						ND	1969-1963								
Toluene	In site soil	ND	1995-1991	ND	1995-1995	ND	1995-1992	ND	C.F.	100	1993	NA		NA	
(ug/Kg)		ND	1991-1983			ND	1992-1986	ND	C.F.	870	1976				
		ND	1983-1976	ND	1995-1990			ND	C.F.	ND	1964				
		ND	1976-1968			ND	1986-1980			ND	1952				
	5,900	ND	1968-1960	ND	1990-1989										
	S-2	380	1960-1953	ND	1989-1988	ND	1980-1974								
						ND	1974-1969								
						ND	1969-1963								
Ethylbenzene	In site soil	ND	1995-1991	26	1995-1995	ND	1995-1992	ND	C.F.	76	1993	NA		NA	
(ug/Kg)		ND	1991-1983			ND	1992-1986	ND	C.F.	550	1976				
		ND	1983-1976	ND	1995-1990			ND	C.F.	680	1964				
		ND	1976-1968			ND	1986-1980			24	1952				
	32,000	ND	1968-1960	ND	1990-1989										
	S-2	800	1960-1953	ND	1989-1988	ND	1980-1974								
						ND	1974-1969								
						ND	1969-1963								
Xylenes	In site soil	ND	1995-1991	26	1995-1995	ND	1995-1992	ND	C.F.	440	1993	NA		NA	
(ug/Kg)		ND	1991-1983			ND	1992-1986	ND	C.F.	2500	1976				
		ND	1983-1976	ND	1995-1990			ND	C.F.	550	1964				
		ND	1976-1968			ND	1986-1980			49	1952				
	190,000	340	1968-1960	ND	1990-1989										
	S-2	780	1960-1953	ND	1989-1988	ND	1980-1974								
						90	1974-1969								
						130	1969-1963								

NA = Not Analyzed
ND = Not detected
C.F.= Chronology Failed

Note: Cores 62 and 100 are not included in the statistical calculations but are color-coded for comparison